

VECTRA® MT® 1345

Liquid Crystal Polymer

Vectra® MT1345 VF3001 (natural) is a 30% mineral filled, easy flow LCP grade for injection molding.

Vectra® MT1345 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/ISO 10993
- low residual monomers
- no animal products

Best overall surface appearance with properties similar to MT1310. Less abrasive than glass fiber reinforced grades. Improved toughness over MT1310. Outstanding hydrolytic stability. Recommended where aesthetics are key. Chemical abbreviation according to ISO 1043-1 : LCP
 Inherently flame retardant.

Product information

Resin Identification	LCP-MD30 ^[DS, 1]	ISO 1043
Part Marking Code	>LCP-MD30< ^[DS, 1]	ISO 11469

[DS]: Derived from similar grade

[1]: ISO 1043 declaration was adjusted to be consistent with IMDS entry for Vectra A530

Rheological properties

Moulding shrinkage, parallel	0.2 %	ISO 294-4, 2577
Moulding shrinkage, normal	0.7 %	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	11000 MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	140 ^[C, 2] MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	3.7 ^[C, 2] %	ISO 527-1/-2
Flexural modulus	11100 ^[C, 2] MPa	ISO 178
Flexural strength	170 ^[C, 2] MPa	ISO 178
Compressive modulus	9500 MPa	ISO 604
Compressive stress at 1% strain	60 MPa	ISO 604
Charpy impact strength, 23°C	50 ^[DS, 3] kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	25 ^[DS, 3] kJ/m ²	ISO 179/1eA
Izod notched impact strength, 23°C	33 kJ/m ²	ISO 180/1A
Izod impact strength, 23°C	40 kJ/m ²	ISO 180/1U
Hardness, Rockwell, M-scale	67	ISO 2039-2
Poisson's ratio	0.34 ^[C]	

[C]: Calculated

[DS]: Derived from similar grade

[2]: Statistical analysis; data harmonized for Vectra A530 nat/black & MT1345 nat

[3]: Data differences between Vectra A530 and Vectra MT1345 (same formulation) have been observed. Data were harmonized due to same formulation. Historical data from Vectra A530

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Thermal properties

Melting temperature, 10 °C/min	280 °C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	190 °C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	203 °C	ISO 75-1/-2
Temperature of deflection under load, 8 MPa	121 °C	ISO 75-1/-2
Vicat softening temperature, 50 °C/h 50N	151 °C	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	13 ^[OT, 4] E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	77 ^[OT, 4] E-6/K	ISO 11359-1/-2

[OT]: One time tested

[4]: Temperature range: -35 °C to 150 °C

Flammability

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

Relative permittivity, 100Hz	3.8	IEC 62631-2-1
Relative permittivity, 1MHz	3.2	IEC 62631-2-1
Dissipation factor, 100Hz	100 E-4	IEC 62631-2-1
Dissipation factor, 1MHz	160 E-4	IEC 62631-2-1
Volume resistivity	1E12 Ohm.m	IEC 62631-3-1
Surface resistivity	>1E15 Ohm	IEC 62631-3-2
Electric strength	44 kV/mm	IEC 60243-1
Comparative tracking index	200	IEC 60112
Arc Resistance	180 s	UL 746B

Physical/Other properties

Density	1650 kg/m ³	ISO 1183
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Injection

Drying Recommended	yes
Drying Temperature	150 °C
Drying Time, Dehumidified Dryer	4 - 6 h
Processing Moisture Content	≤0.01 %
Melt Temperature Optimum	290 ^[DS, 5] °C
Min. melt temperature	280 ^[DS, 5] °C
Max. melt temperature	295 ^[DS, 5] °C
Screw tangential speed	0.2 - 0.3 m/s
Mold Temperature Optimum	100 °C
Min. mould temperature	80 °C
Max. mould temperature	120 °C
Back pressure	3 MPa
Ejection temperature	227 °C

[DS]: Derived from similar grade

[5]: Data differences between Vectra A530 and Vectra MT1345 (same formulation) have been observed. Data were harmonized due to same formulation.

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Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Mineral Filler
Special characteristics	Light stabilised or stable to light

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. The Vectra MT-grades MT1300, MT1305, MT1310, MT1335, MT1340 and MT1345 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 $\leq -40^{\circ}\text{C}$. The time between drying and processing should be as short as possible.

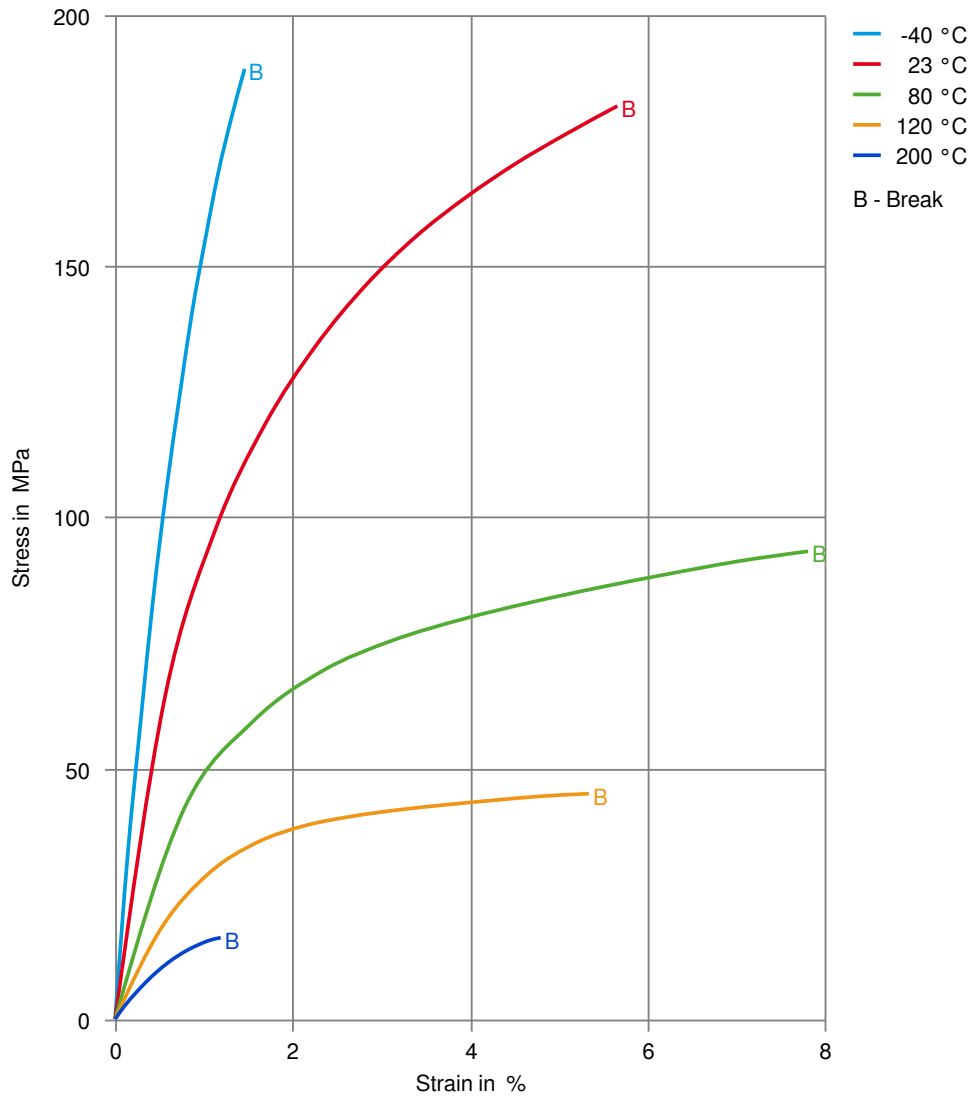
Storage

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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Stress-strain



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Secant modulus-strain

