VECTRA® MT®1310

30% glass fiber, exc. bal. of properties
Vectra® MT1310 VF3001 (natural) is a 30% glass reinforced, easy flow LCP grade for injection molding.

Vectra® MT1310 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

The Standard for the Industry. Excellent balance of properties, including easy flow, easy processing, thermal stability, chemical resistance, mechanical and electrical properties. Suitable for vapor phase surface mount electrical and electronic devices.
Chemical abbreviation according to ISO 1043-1 : LCP
Inherently flame retardant

Rheological properties

Moulding shrinkage range, parallel	0.2	%	ISO 294-4, 2577
Moulding shrinkage range, normal	0.4	%	ISO 294-4, 2577

Typical mechanical properties

Tensile Modulus	15000	MPa	ISO 527-1/-2
Stress at break, 5mm/min	190	MPa	ISO 527-1/-2
Strain at break, 5mm/min	2.1	%	ISO 527-1/-2
Flexural Modulus	15000	MPa	ISO 178
Flexural Strength	260	MPa	ISO 178
Compressive modulus	14500	MPa	ISO 604
Compressive stress at 1% strain	100	MPa	ISO 604
Tensile creep modulus, 1h	12600	MPa	ISO 899-1
Tensile creep modulus, 1000h	10900	MPa	ISO 899-1
Charpy notched impact strength, 23°C	46	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	33	kJ/m²	ISO 180/1A
Hardness, Rockwell, M-scale	85		ISO 2039-2

Thermal properties

Melting temperature, 10°C/min	280	°C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	235	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	250	°C	ISO 75-1/-2
Temp. of deflection under load, 8 MPa	190	°C	ISO 75-1/-2
Coeff. of linear therm. expansion, parallel	6	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	23	E-6/K	ISO 11359-1/-2

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Flammability

Burning Behav. at thickness h	V-0	class	UL 94
Oxygen index	45	%	ISO 4589-1/-2

Electrical properties

Relative permittivity, 100Hz	4.2		IEC 62631-2-1
Relative permittivity, 1MHz	3.7		IEC 62631-2-1
Dissipation factor, 100Hz	160	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	180	E-4	IEC 62631-2-1
Volume resistivity	1E13	Ohm.m	IEC 62631-3-1
Surface resistivity	>1E15	Ohm	IEC 62631-3-2
Electric strength	31	kV/mm	IEC 60243-1
Comparative tracking index	PLC 3	PLC	UL 746A
Arc Resistance	140	s	Internal

Other properties

Humidity absorption, 2mm	0.04	%	Sim. to ISO 62
Density	1620	kg/m³	ISO 1183

Injection

Drying Temperature	150	°C	
Drying Time, Dehumidified Dryer	4 - 6	h	
Processing Moisture Content	0.01	%	
Melt Temperature Optimum	290	°C	Internal
Screw tangential speed	0.17 - 0.18	m/s	
Max. mould temperature	80 - 120	°C	
Back pressure	3	MPa	
Injection speed	very fast		

Additional information

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.

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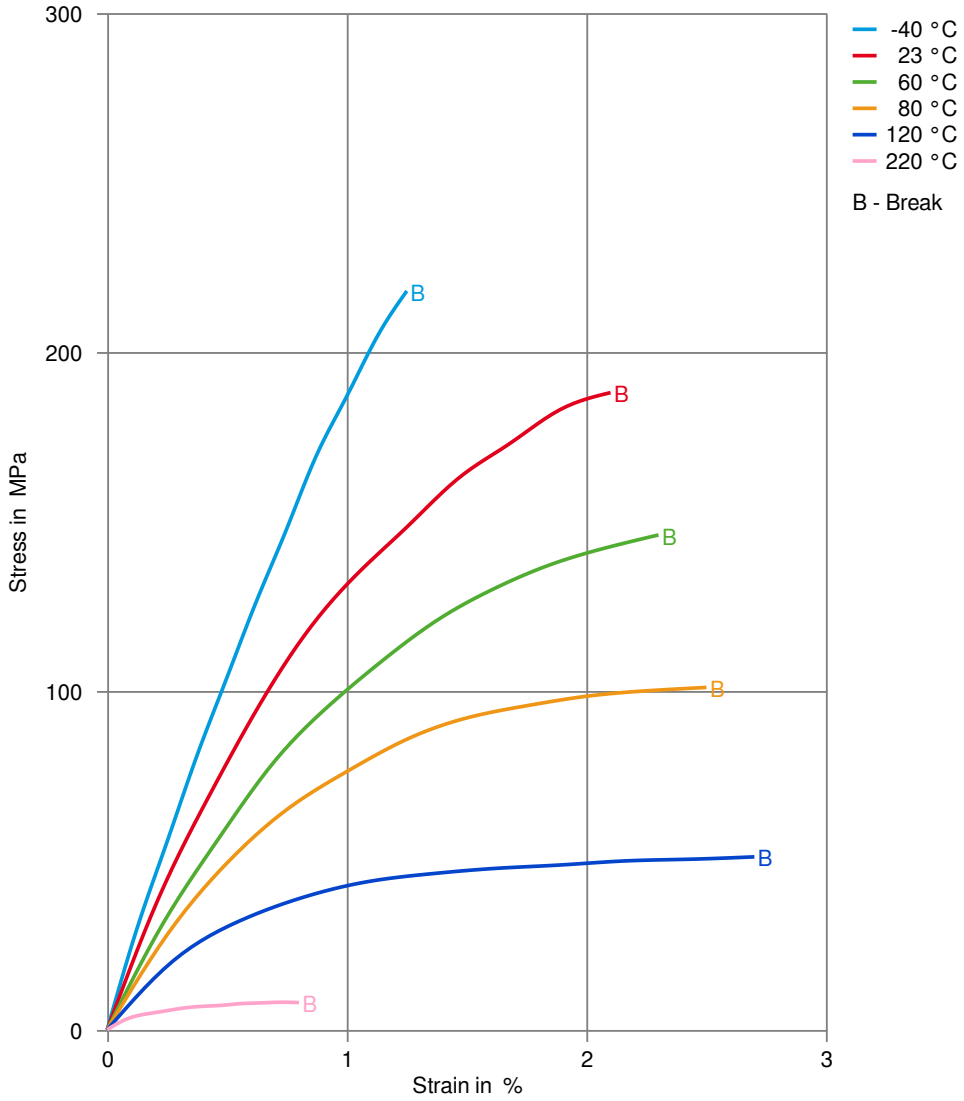
Stress-strain



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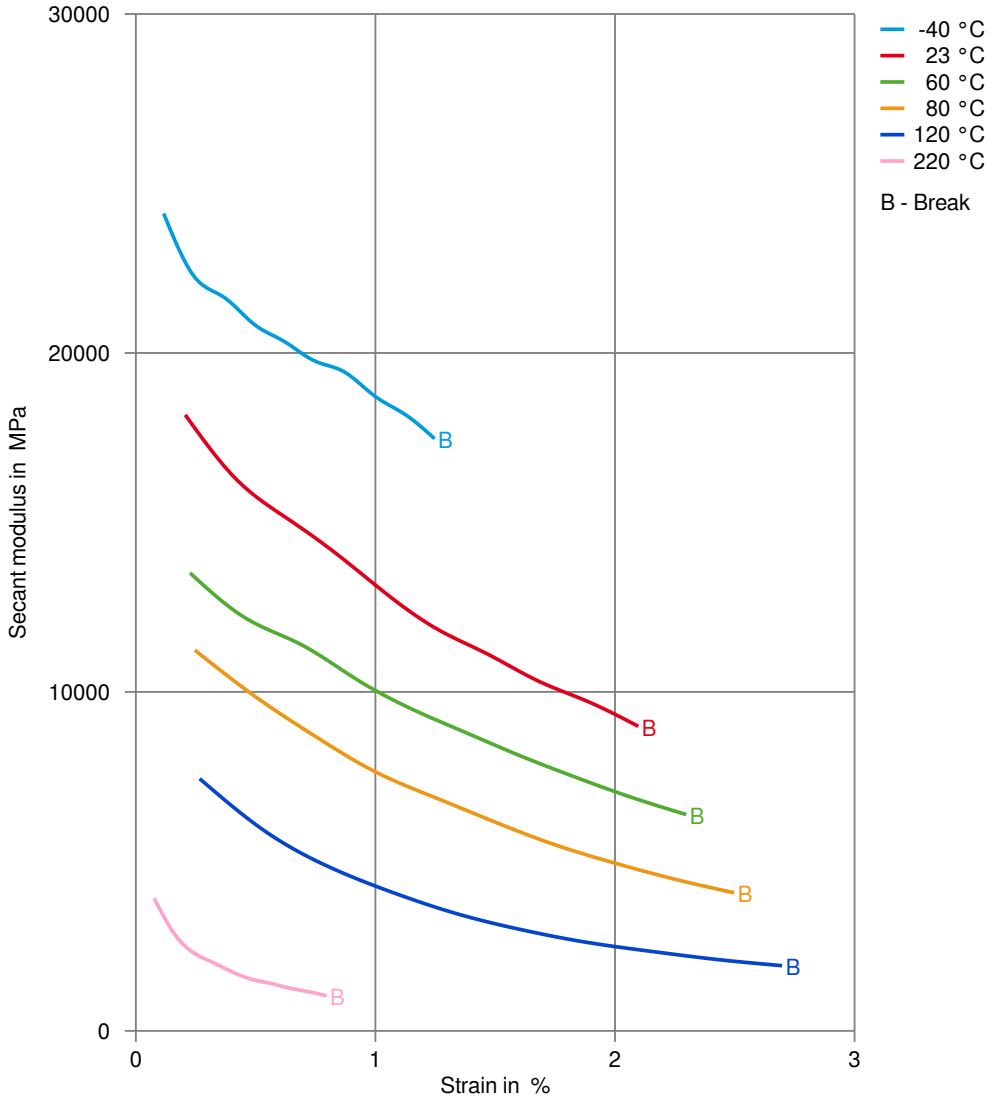
Secant modulus-strain



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Processing Texts

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.
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 (<= 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. 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.