Ticona
Performance Driven Solutions™

VECTRA® MT1310 | LCP | Medical Technology

Description

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. 30% glass reinforced

Chemical abbreviation according to ISO 1043-1 : LCP
Inherently flame retardant
Ticona has established at the FDA a drug master file (DMF no.8468) and a Device Master File (MAF no.315) for Vectra MT1310. These are to assist our customers with their end use FDA petitions. Vectra MT1310 has been tested and complies with USP Class VI.

Physical properties	Value	Unit	Test Standard
Density	**1620**	kg/m³	ISO 1183
Mold shrinkage - parallel	**0.2**	%	ISO 294-4
Mold shrinkage - normal	**0.4**	%	ISO 294-4
Humidity absorption (23°C/50%RH)	**0.04**	%	ISO 62

Mechanical properties	Value	Unit	Test Standard
Tensile modulus (1mm/min)	**15000**	MPa	ISO 527-2/1A
Tensile stress at break (5mm/min)	**190**	MPa	ISO 527-2/1A
Tensile strain at break (5mm/min)	**2.1**	%	ISO 527-2/1A
Tensile creep modulus (1h)	**12600**	MPa	ISO 899-1
Tensile creep modulus (1000h)	**10900**	MPa	ISO 899-1
Flexural modulus (23°C)	**15000**	MPa	ISO 178
Flexural strength (23°C)	**280**	MPa	ISO 178
Compressive stress @ 1% strain	**100**	MPa	ISO 604
Charpy impact strength @ 23°C	**33**	kJ/m²	ISO 179/1eU
Charpy notched impact strength @ 23°C	**26**	kJ/m²	ISO 179/1eA
Unnotched impact str (Izod) @ 23°C	**29**	kJ/m²	ISO 180/1U
Notched impact strength (Izod) @ 23°C	**23**	kJ/m²	ISO 180/1A
Compressive modulus	**14500**	MPa	ISO 604
Rockwell hardness	**85**	M-Scale	ISO 2039-2

Thermal properties	Value	Unit	Test Standard
Melting temperature (10°C/min)	**280**	°C	ISO 11357-1,-2,-3
DTUL @ 1.8 MPa	**235**	°C	ISO 75-1/-2
DTUL @ 0.45 MPa	**250**	°C	ISO 75-1/-2
DTUL @ 8.0 MPa	**190**	°C	ISO 75-1/-2
Vicat softening temperature B50 (50°C/h 50N)	**160**	°C	ISO 306
Coeff.of linear therm. expansion (parallel)	**0.06**	E-4/°C	ISO 11359-2
Coeff.of linear therm. expansion (normal)	**0.23**	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	**4.2**	-	IEC 60250
Relative permittivity - 1 MHz	**3.7**	-	IEC 60250
Dissipation factor - 100 Hz	**160**	E-4	IEC 60250
Dissipation factor - 1 MHz	**180**	E-4	IEC 60250

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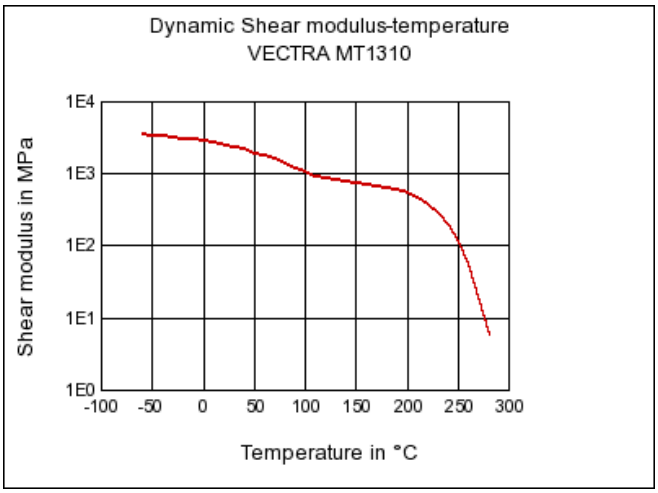
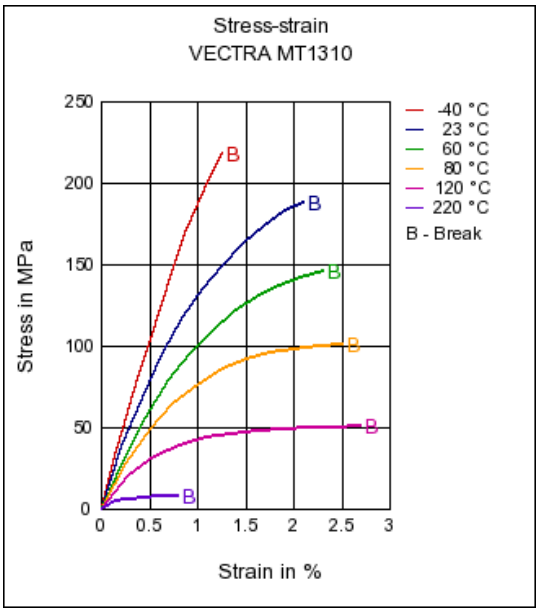
Electrical properties	Value	Unit	Test Standard
Volume resistivity	**1E13**	Ohm*m	IEC 60093
Surface resistivity	**>1E15**	Ohm	IEC 60093
Electric strength	**31**	kV/mm	IEC 60243-1
Comparative tracking index CTI	**175**	-	IEC 60112
Arc resistance	**140**	s	Internal

Test specimen production	Value	Unit	Test Standard
Injection molding melt temperature	**293**	°C	ISO 294
Injection molding mold temperature	**60**	°C	ISO 294
Injection molding flow front velocity	**150**	mm/s	ISO 294
Injection molding hold pressure	**48**	MPa	ISO 294

Dynamic Shear modulus-temperature



Stress-strain



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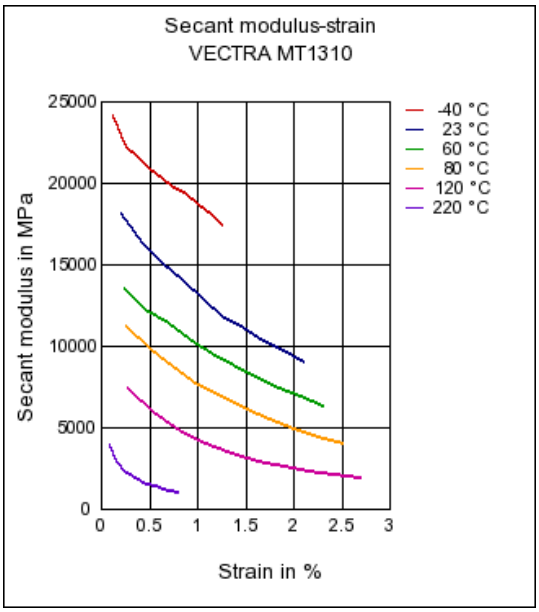
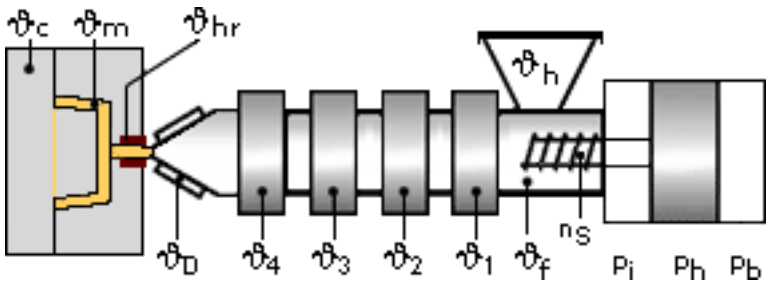
Secant modulus-strain



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 =< - 40° 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 (<= 24 h).

Drying time: 4 - 6 h

Drying temperature: 150 - 150 °C

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Temperature:

	Manifold	Mold	Melt	Nozzle	Zone4	Zone3	Zone2	Zone1	Feed	Hopper
min (°C)	285	80	285	290	285	280	275	270	60	20
max (°C)	295	120	295	300	295	290	285	280	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.

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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