

VECTRA® A230 | LCP | Specialty

Description

Exceptional stiffness. Electrically conductive. 30% carbon fiber reinforced.

Chemical abbreviation according to ISO 1043-1 : LCP

Inherently flame retardant

UL-Listing V-0 at 0.43mm 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	1500	kg/m ³	ISO 1183
Mold shrinkage - parallel	0.1	%	ISO 294-4
Mold shrinkage - normal	0.3	%	ISO 294-4
Humidity absorption (23°C/50%RH)	0.06	%	ISO 62

Mechanical properties	Value	Unit	Test Standard
Tensile modulus (1mm/min)	23500	MPa	ISO 527-2/1A
Tensile stress at break (5mm/min)	149	MPa	ISO 527-2/1A
Tensile strain at break (5mm/min)	1.1	%	ISO 527-2/1A
Tensile creep modulus (1h)	19600	MPa	ISO 899-1
Tensile creep modulus (1000h)	15800	MPa	ISO 899-1
Flexural modulus (23°C)	26000	MPa	ISO 178
Flexural strength (23°C)	228	MPa	ISO 178
Compressive stress @ 1% strain	136	MPa	ISO 604
Charpy impact strength @ 23°C	13.0	kJ/m ²	ISO 179/1eU
Charpy notched impact strength @ 23°C	7.0	kJ/m ²	ISO 179/1eA
Unnotched impact str (Izod) @ 23°C	18	kJ/m ²	ISO 180/1U
Notched impact strength (Izod) @ 23°C	7.0	kJ/m ²	ISO 180/1A
Compressive modulus	23500	MPa	ISO 604
Rockwell hardness	83	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	233	°C	ISO 75-1/-2
DTUL @ 0.45 MPa	250	°C	ISO 75-1/-2
DTUL @ 8.0 MPa	193	°C	ISO 75-1/-2
Vicat softening temperature B50 (50°C/h 50N)	179	°C	ISO 306
Coeff.of linear therm. expansion (parallel)	0.02	E-4/°C	ISO 11359-2
Coeff.of linear therm. expansion (normal)	0.06	E-4/°C	ISO 11359-2
Flammability at thickness h	V-0	class	UL94

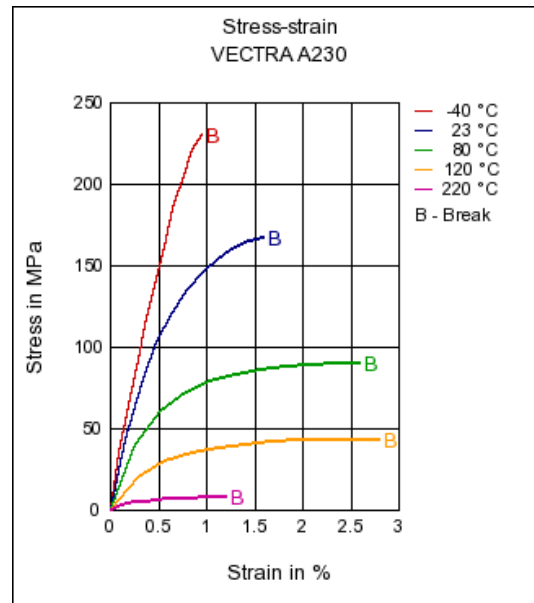
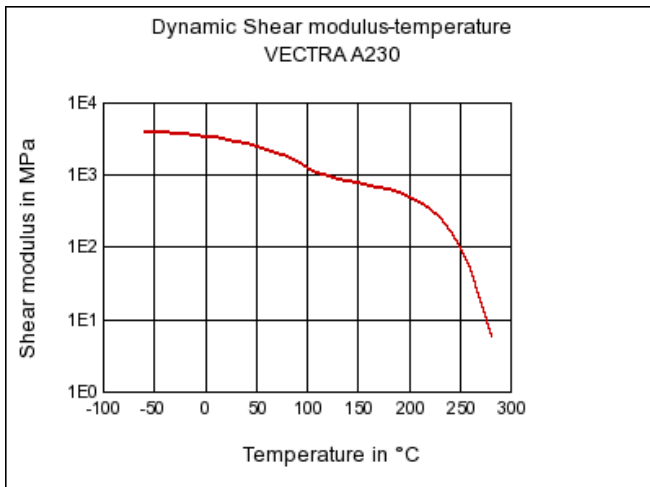
Electrical properties	Value	Unit	Test Standard
Relative permittivity - 1 MHz	16.1	-	IEC 60250
Dissipation factor - 1 MHz	257	E-4	IEC 60250
Volume resistivity	1	Ohm*m	IEC 60093
Surface resistivity	10	Ohm	IEC 60093

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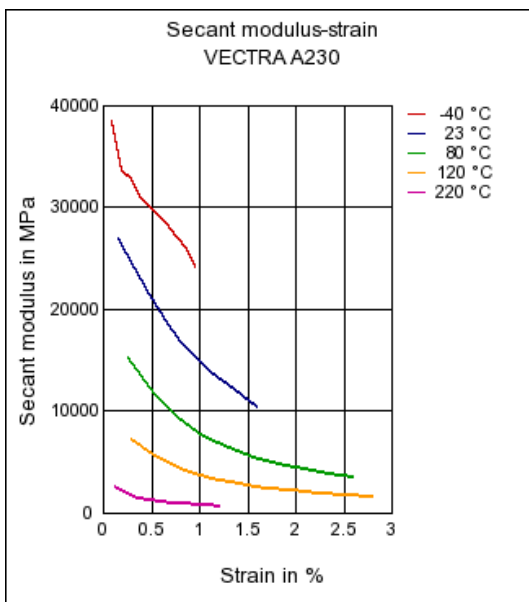
Test specimen production	Value	Unit	Test Standard
Injection molding melt temperature	293	°C	ISO 294
Injection molding mold temperature	60	°C	ISO 294
Injection molding flow front velocity	150	mm/s	ISO 294
Injection molding hold pressure	48	MPa	ISO 294

Dynamic Shear modulus-temperature

Stress-strain

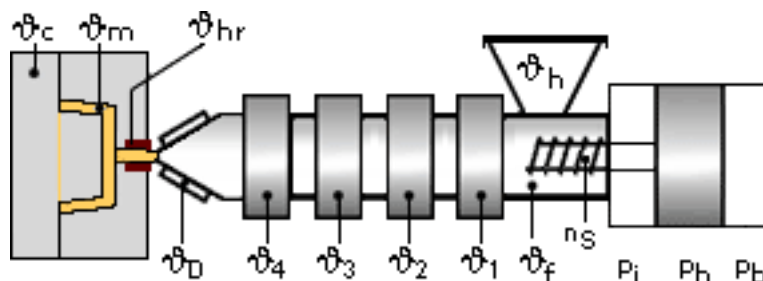


Secant modulus-strain



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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 (≤ 24 h).

Drying time: 4 - 6 h

Drying temperature: 150 - 150 °C

Temperature:

	$\varnothing_{\text{Manifold}}$	$\varnothing_{\text{Mold}}$	$\varnothing_{\text{Melt}}$	$\varnothing_{\text{Nozzle}}$	$\varnothing_{\text{Zone4}}$	$\varnothing_{\text{Zone3}}$	$\varnothing_{\text{Zone2}}$	$\varnothing_{\text{Zone1}}$	$\varnothing_{\text{Feed}}$	$\varnothing_{\text{Hopper}}$
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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Contact Information

Americas

Ticona North American Headquarters
Product Information Service
8040 Dixie Highway
Florence, KY 41042
USA
Tel.: +1-800-833-4882
Tel.: +1-859-372-3244
email: prodinfo@ticona.com
Ticona on the web: www.ticona.com

Customer Service

Tel.: +1-800-526-4960
Tel.: +1-859-372-3214
Fax: +1-859-372-3125

Europe

Ticona GmbH
Information Service
Tel.: +49 (0) 180-5842662 (Germany)
+49 (0) 69-30516299 (Europe)
Fax: +49 (0) 180-2021202 (Germany & Europe)
email: infoservice@ticona.de
Internet: www.ticona.com

General Disclaimer

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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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