Celanese
The chemistry inside innovation™

VECTRA® A950

suitable for extrusion
Unreinforced Vectra grade suitable for extrusion.
Chemical abbreviation according to ISO 1043-1 : LCP Inherently flame retardant FDA compliant. UL-Listing V-0 in natural and black at 0.42mm thickness per UL 94 flame testing. Relative-Temperature-Index (RTI) according to UL 746B: electrical 240°C, mechanical 220°C. UL = Underwriters Laboratories (USA)

Rheological properties

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

Typical mechanical properties

Tensile Modulus	7800	MPa	ISO 527-1/-2
Stress at break, 5mm/min	148	MPa	ISO 527-1/-2
Strain at break, 5mm/min	5.7	%	ISO 527-1/-2
Flexural Modulus	9100	MPa	ISO 178
Flexural Strength	158	MPa	ISO 178
Tensile creep modulus, 1h	9000	MPa	ISO 899-1
Tensile creep modulus, 1000h	6600	MPa	ISO 899-1
Charpy impact strength, 23°C	267	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	53	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	95	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	95	kJ/m²	ISO 180/1A
Izod impact strength, 23°C	252	kJ/m²	ISO 180/1U
Poisson's ratio	0.488		

Thermal properties

Melting temperature, 10°C/min	280	°C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	193	°C	ISO 75-1/-2
Temp. of deflection under load, 8 MPa	94	°C	ISO 75-1/-2
Coeff. of linear therm. expansion, parallel	-2	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	81	E-6/K	ISO 11359-1/-2

Flammability

Burning Behav. at thickness h	V-0	class	UL 94

Electrical properties

Relative permittivity, 100Hz	3.2		IEC 62631-2-1
Relative permittivity, 1MHz	3		IEC 62631-2-1
Dissipation factor, 100Hz	159	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	200	E-4	IEC 62631-2-1
Volume resistivity	1E13	Ohm.m	IEC 62631-3-1
Surface resistivity	1E14	Ohm	IEC 62631-3-2
Electric strength	47	kV/mm	IEC 60243-1

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Comparative tracking index	PLC 4	PLC	UL 746A
Comparative tracking index M	Group IIIb[1]		IEC 60112

[1]: 100 drops

Other properties

Humidity absorption, 2mm	0.03	%	Sim. to ISO 62
Water absorption, 2mm	0.06	%	Sim. to ISO 62
Density	1400	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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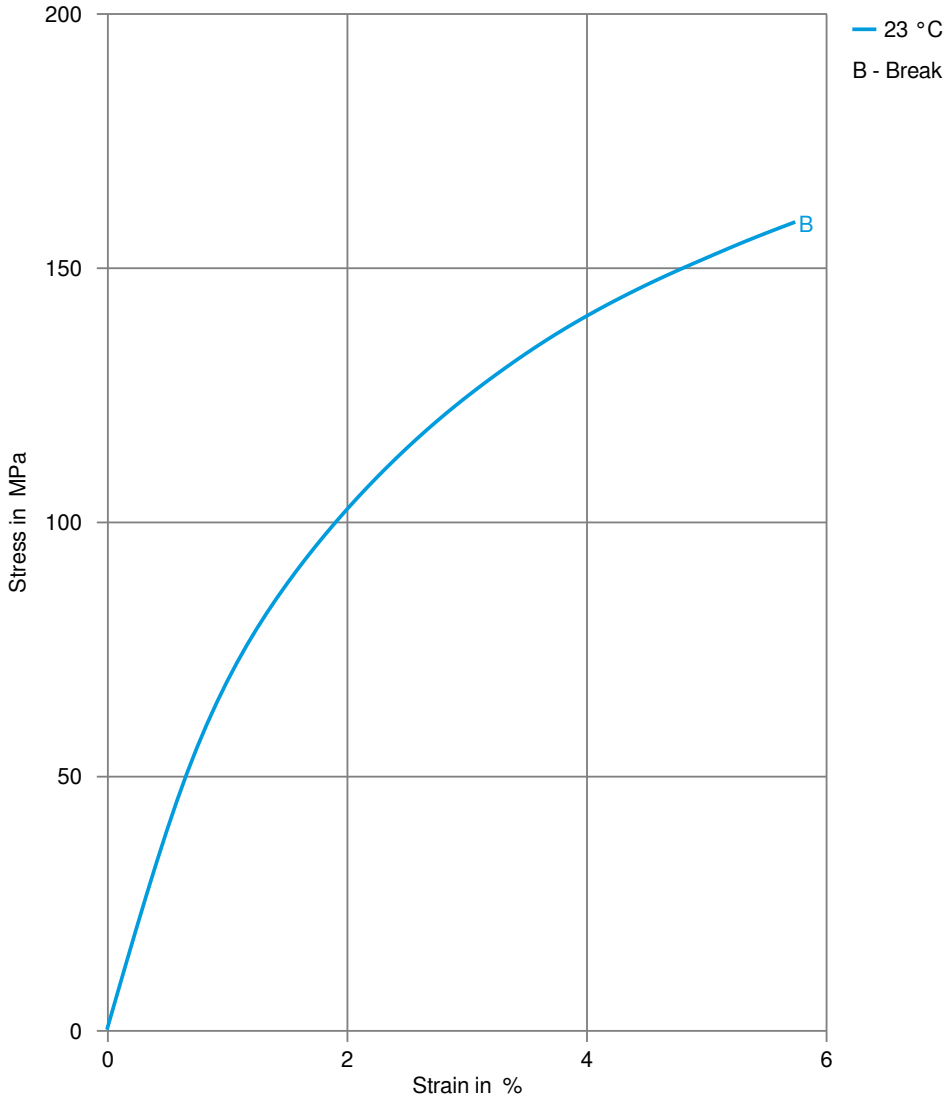
Stress-strain



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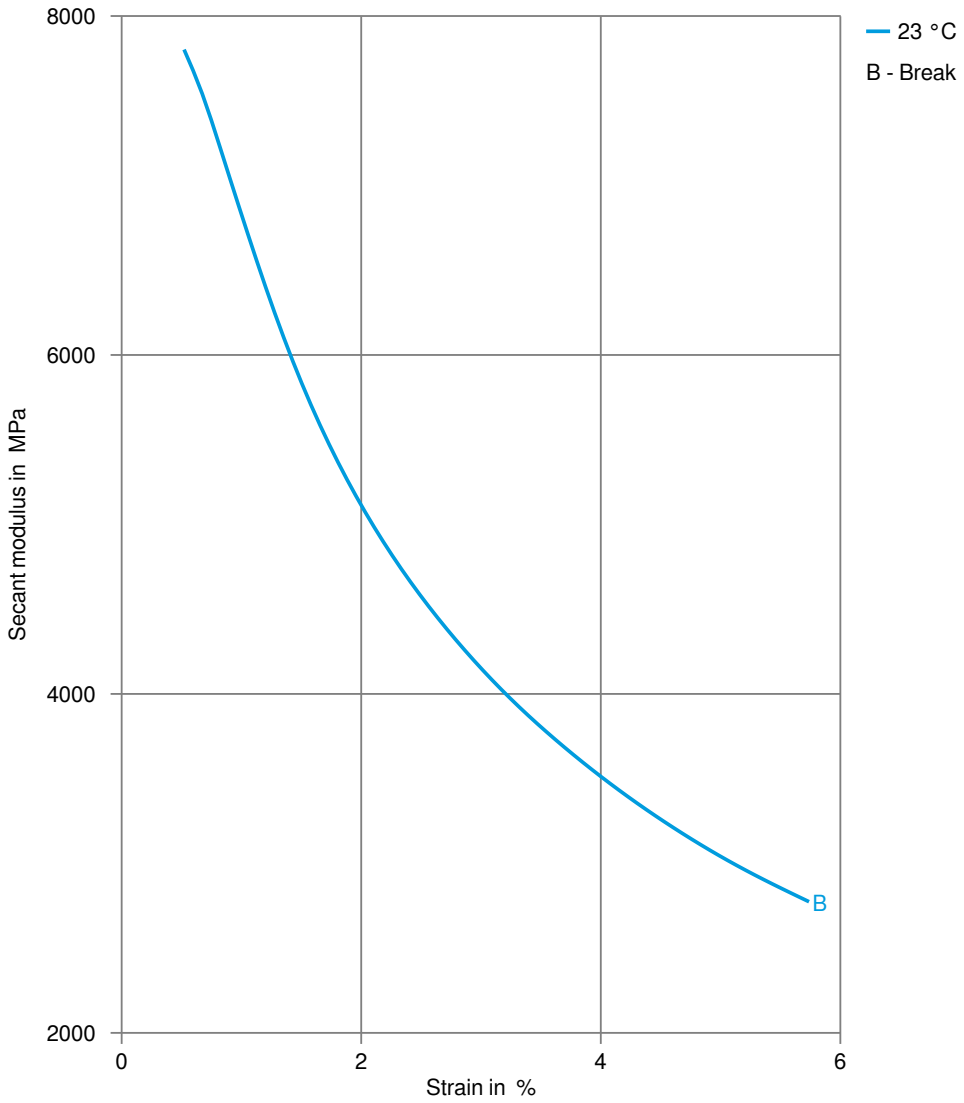
Secant modulus-strain



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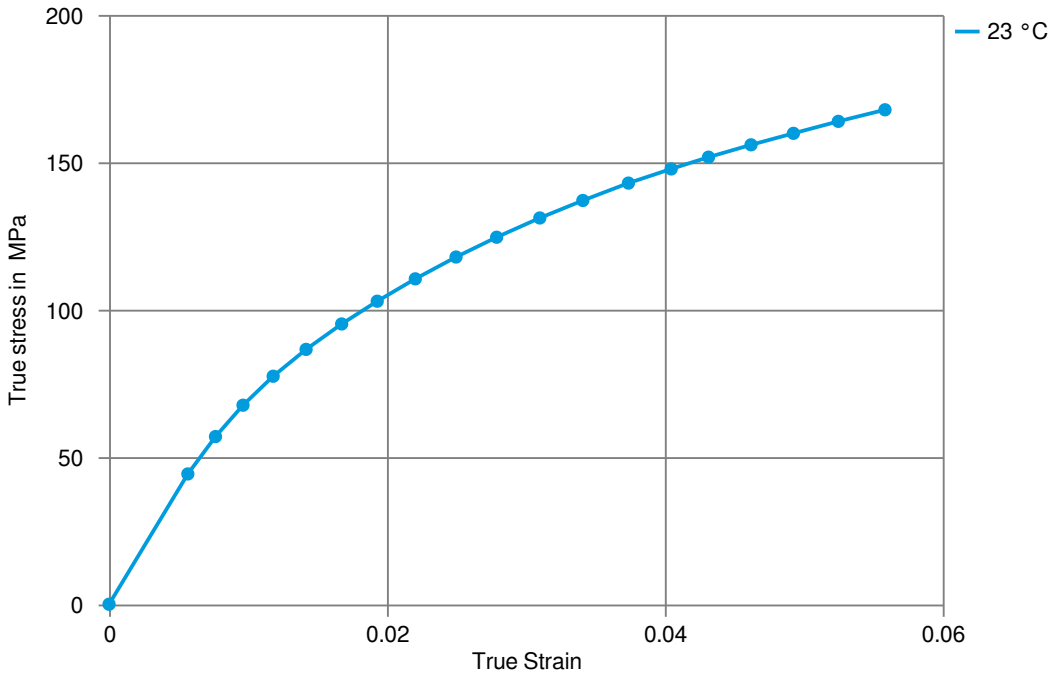
True stress-strain



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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. Vectra A-grades should be dried at 150 C for a minimum of 4 hours in a desiccant dryer.