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Zytel® 158 NC010

LONG CHAIN POLYAMIDE RESIN

Zytel® LCPA long chain polyamide resins provide an innovative and growing portfolio of flexible polymers with excellent thermal, chemical, and hydrolysis resistance. The diverse selection of Zytel® LCPA grades is targeted for a range of performance characteristics, balancing temperature resistance, flexibility and low permeation.

Zytel® 158 NC010 is an intermediate viscosity polyamide 612 resin.

Product information

Resin Identification	PA612	ISO 1043
Part Marking Code	>PA612<	ISO 11469
ISO designation	ISO 16396-PA612,,M1G1N,S12-020	

Rheological properties

	dry/cond.		
Viscosity number	120[1]/*	cm³/g	ISO 307, 1628
Intrinsic viscosity	1.19		ISO 307, 1628
Moulding shrinkage, parallel	1.5/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.5/-	%	ISO 294-4, 2577
Mold Shrinkage, Flow, 3.2mm (0.125in)	1.1/*	%	
Mold Shrinkage, Transverse, 3.2mm (0.125in)	1.1/*	%	

[1]: Sulfuric acid 96%

Typical mechanical properties

	dry/cond.		
Tensile modulus	2400/1500	MPa	ISO 527-1/-2
Tensile stress at yield, 50mm/min	62/52	MPa	ISO 527-1/-2
Tensile strain at yield, 50mm/min	4.3/19	%	ISO 527-1/-2
Nominal strain at break	35/>50	%	ISO 527-1/-2
Flexural strength	85/57	MPa	ISO 178
Charpy impact strength, 23°C	N/N	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	N/N	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	4.2/8	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	4.2/4	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	4/6	kJ/m²	ISO 180/1A
Izod notched impact strength, -30°C	5.0/4.5	kJ/m²	ISO 180/1A
Hardness, Rockwell, R-scale	114/108		ISO 2039-2
Poisson's ratio	0.38/0.43		

Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	218/*	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	60/45	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	62/*	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	135/*	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	180/*	°C	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	120/*	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	120/*	E-6/K	ISO 11359-1/-2
Thermal conductivity, flow	0.22	W/(m K)	ISO 22007-2

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Thermal conductivity of melt	0.19	W/(m K)	ISO 22007-2
Specific heat capacity of melt	2800	J/(kg K)	ISO 22007-4
Specific heat capacity solid	2660	J/(kg K)	ISO 22007-4
RTI, electrical, 0.75mm	105	°C	UL 746B
RTI, electrical, 1.5mm	105	°C	UL 746B
RTI, electrical, 3.0mm	105	°C	UL 746B
RTI, impact, 0.75mm	65	°C	UL 746B
RTI, impact, 1.5mm	65	°C	UL 746B
RTI, impact, 3.0mm	65	°C	UL 746B
RTI, strength, 0.75mm	65	°C	UL 746B
RTI, strength, 1.5mm	65 / *	°C	UL 746B
RTI, strength, 3.0mm	65	°C	UL 746B

Flammability

	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	HB / *	class	IEC 60695-11-10
Thickness tested	1.5 / *	mm	IEC 60695-11-10
UL recognition	yes / *		UL 94
Burning Behav. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested	0.86 / *	mm	IEC 60695-11-10
UL recognition	yes / *		UL 94
Oxygen index	25 / *	%	ISO 4589-1/-2
Glow Wire Flammability Index, 0.4mm	850 / -	°C	IEC 60695-2-12
Glow Wire Flammability Index, 0.75mm	850 / -	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.0mm	850 / -	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm	850 / -	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	960 / -	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	725 / -	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 0.4mm	725 / -	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 1.0mm	725 / -	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 1.5mm	725 / -	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 2.0mm	725 / -	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 3.0mm	725 / -	°C	IEC 60695-2-13
Glow Wire Temperature, No Flame, 0.75mm	700 / -	°C	IEC 60335-1
Glow Wire Temperature, No Flame, 1mm	700 / -	°C	IEC 60335-1
Glow Wire Temperature, No Flame, 1.5mm	700 / -	°C	IEC 60335-1
Glow Wire Temperature, No Flame, 2mm	700 / -	°C	IEC 60335-1
Glow Wire Temperature, No Flame, 3mm	700 / -	°C	IEC 60335-1
FMVSS Class	SE		ISO 3795 (FMVSS 302)

Electrical properties

	dry/cond.		
Relative permittivity, 100Hz	3.6 / 6		IEC 62631-2-1
Relative permittivity, 1MHz	3.2 / 4		IEC 62631-2-1
Dissipation factor, 100Hz	140 / 1500	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	165 / 1000	E-4	IEC 62631-2-1
Volume resistivity	>1E13 / 1E11	Ohm.m	IEC 62631-3-1
Surface resistivity	* / 1E12	Ohm	IEC 62631-3-2
Electric strength	36 / 36	kV/mm	IEC 60243-1

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Physical/Other properties

	dry/cond.		
Humidity absorption, 2mm	1.3 / *	%	Sim. to ISO 62
Water absorption, 2mm	3 / *	%	Sim. to ISO 62
Water absorption, Immersion 24h	0.4 / *	%	Sim. to ISO 62
Density	1060 / -	kg/m³	ISO 1183
Density of melt	900	kg/m³	

Film Properties

	dry/cond.		
Strain at yield, parallel	4.3 / *	%	ISO 527-3

Injection

Drying Recommended	yes	
Drying Temperature	80	°C
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	≤0.15	%
Melt Temperature Optimum	250	°C
Min. melt temperature	230	°C
Max. melt temperature	290	°C
Mold Temperature Optimum	70	°C
Min. mould temperature	40	°C
Max. mould temperature	95	°C
Ejection temperature	160	°C

Extrusion

Drying Temperature	75 - 80	°C
Drying Time, Dehumidified Dryer	3 - 4	h
Processing Moisture Content	≤0.06	%
Melt Temperature Optimum	240	°C
Melt Temperature Range	235 - 250	°C

Characteristics

Processing	Injection Moulding, Other Extrusion, Coatable
Delivery form	Pellets

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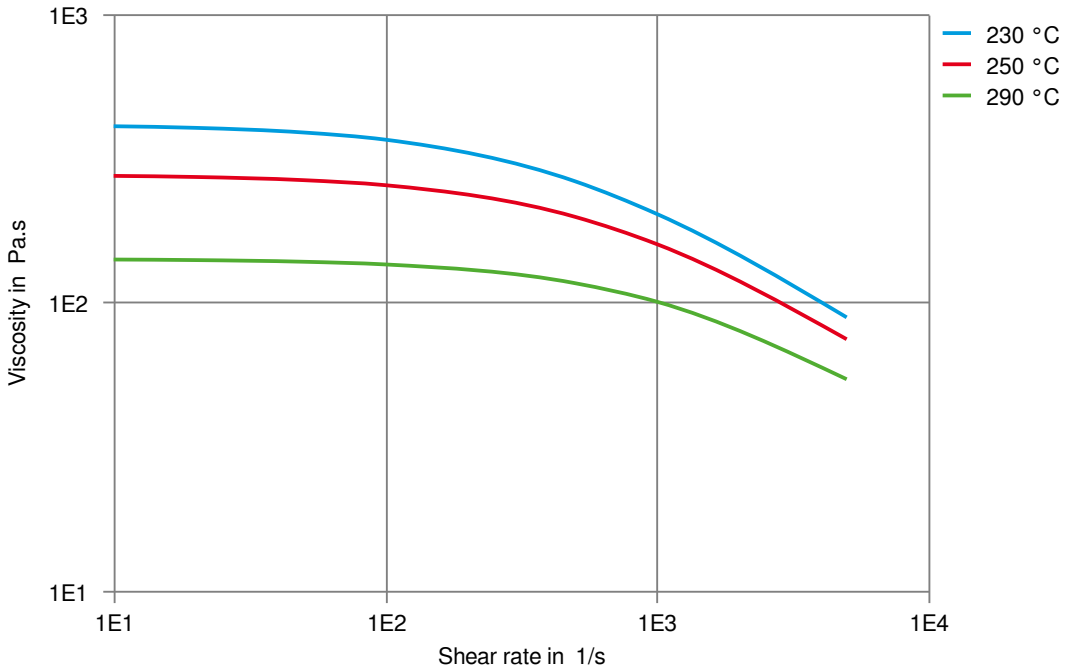
Viscosity-shear rate



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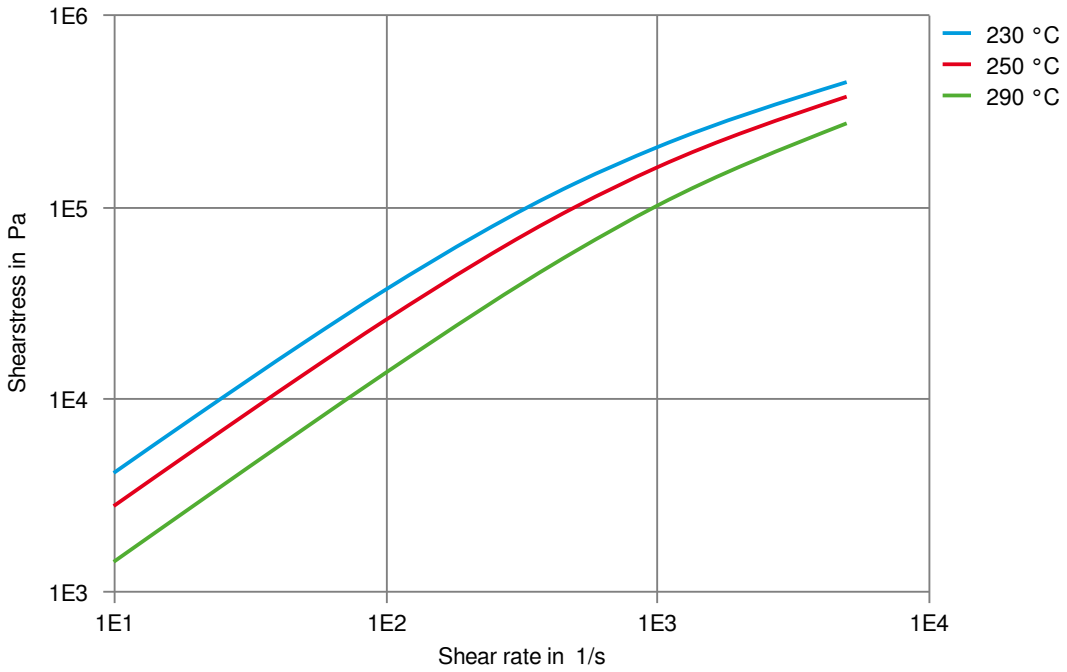
Shearstress-shear rate



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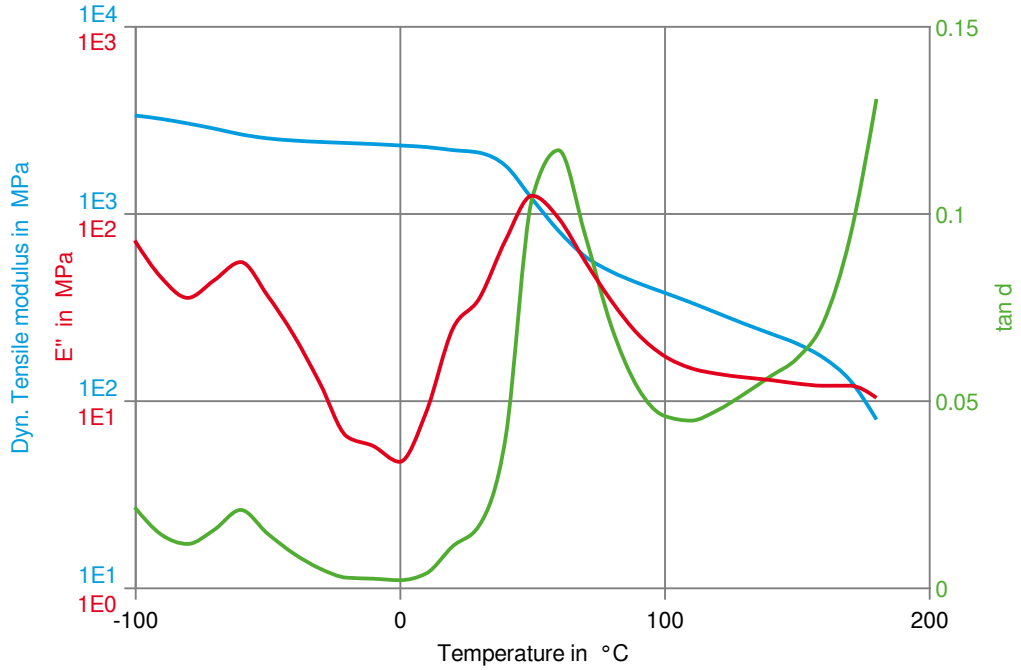
Dynamic Tensile modulus-temperature (dry)



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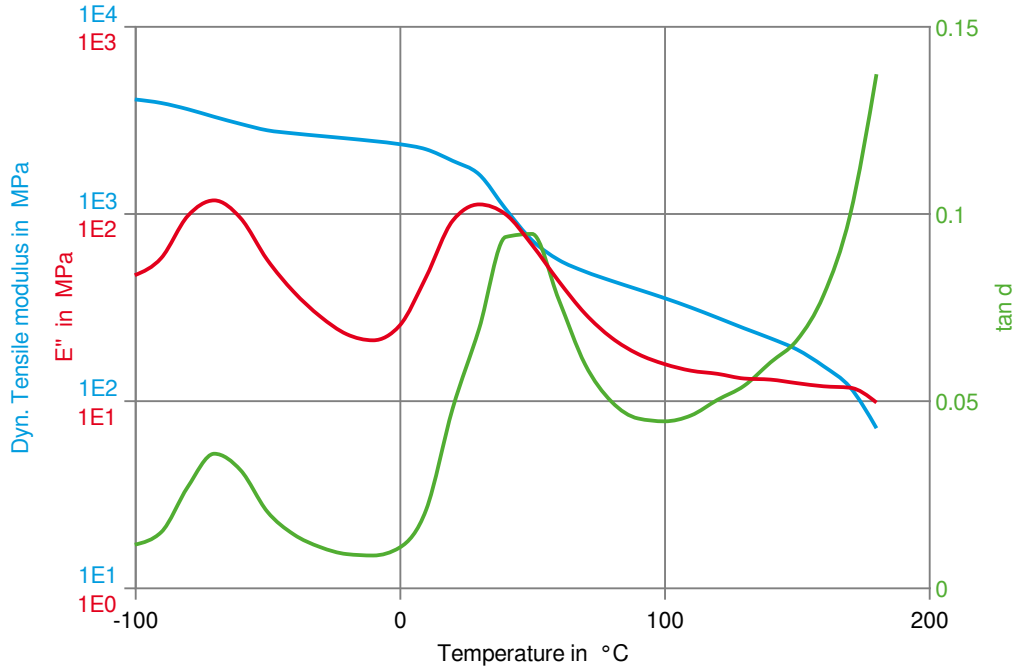
Dynamic Tensile modulus-temperature (cond.)



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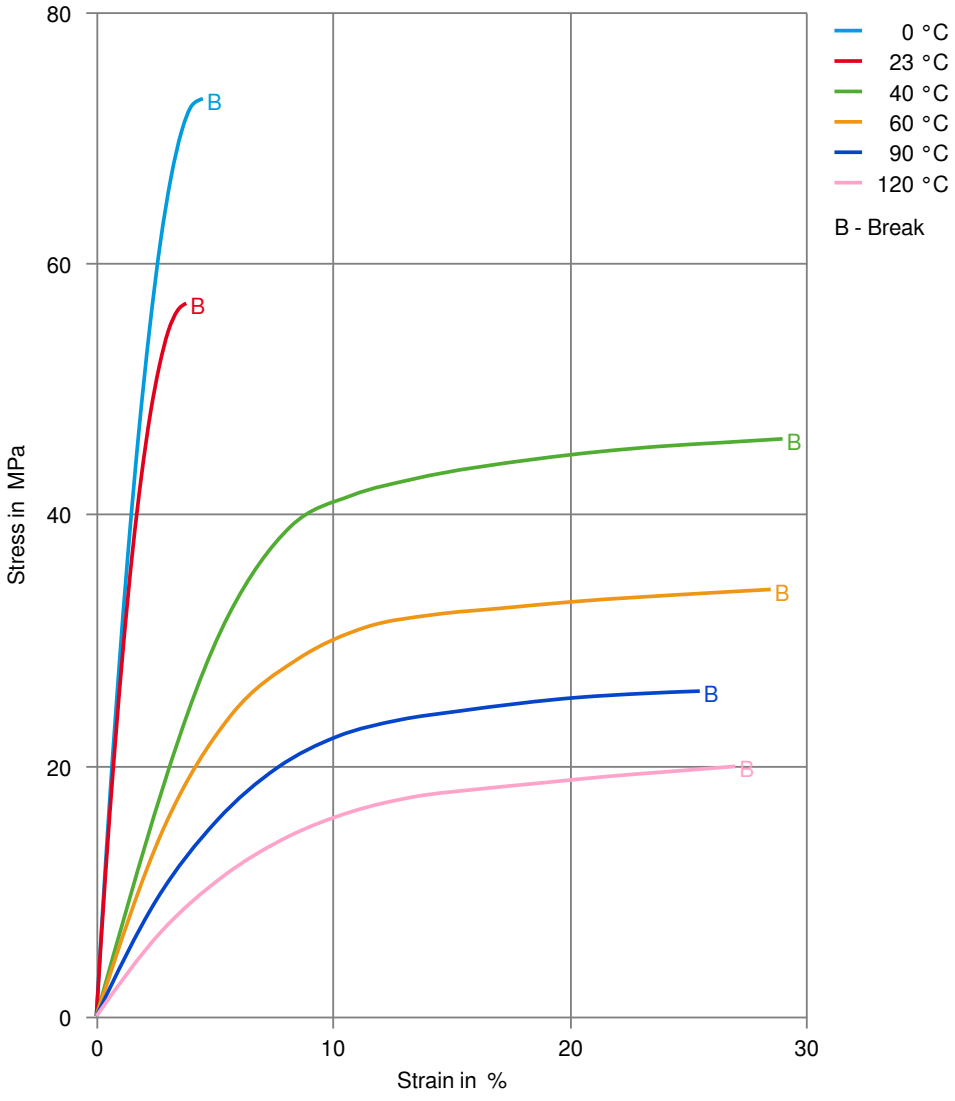
Stress-strain (dry)



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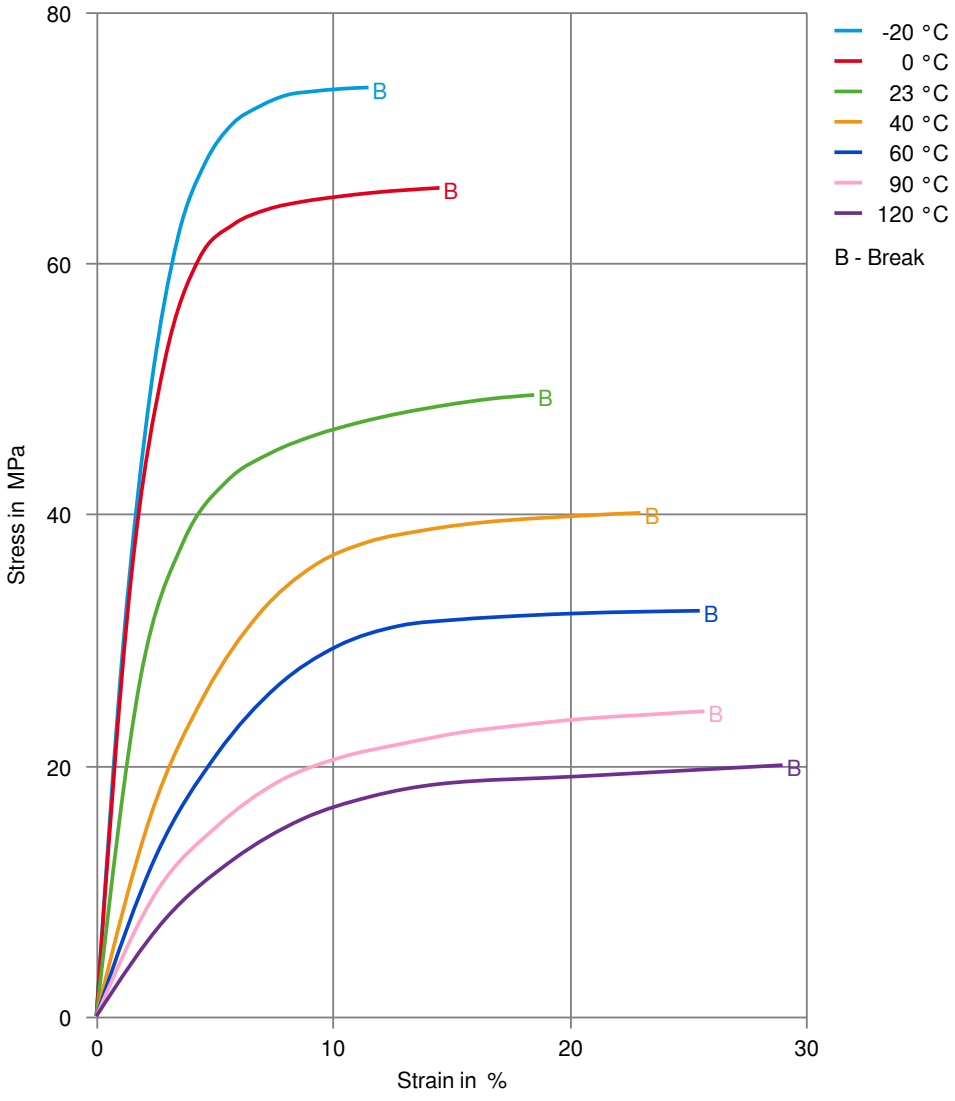
Stress-strain (cond.)



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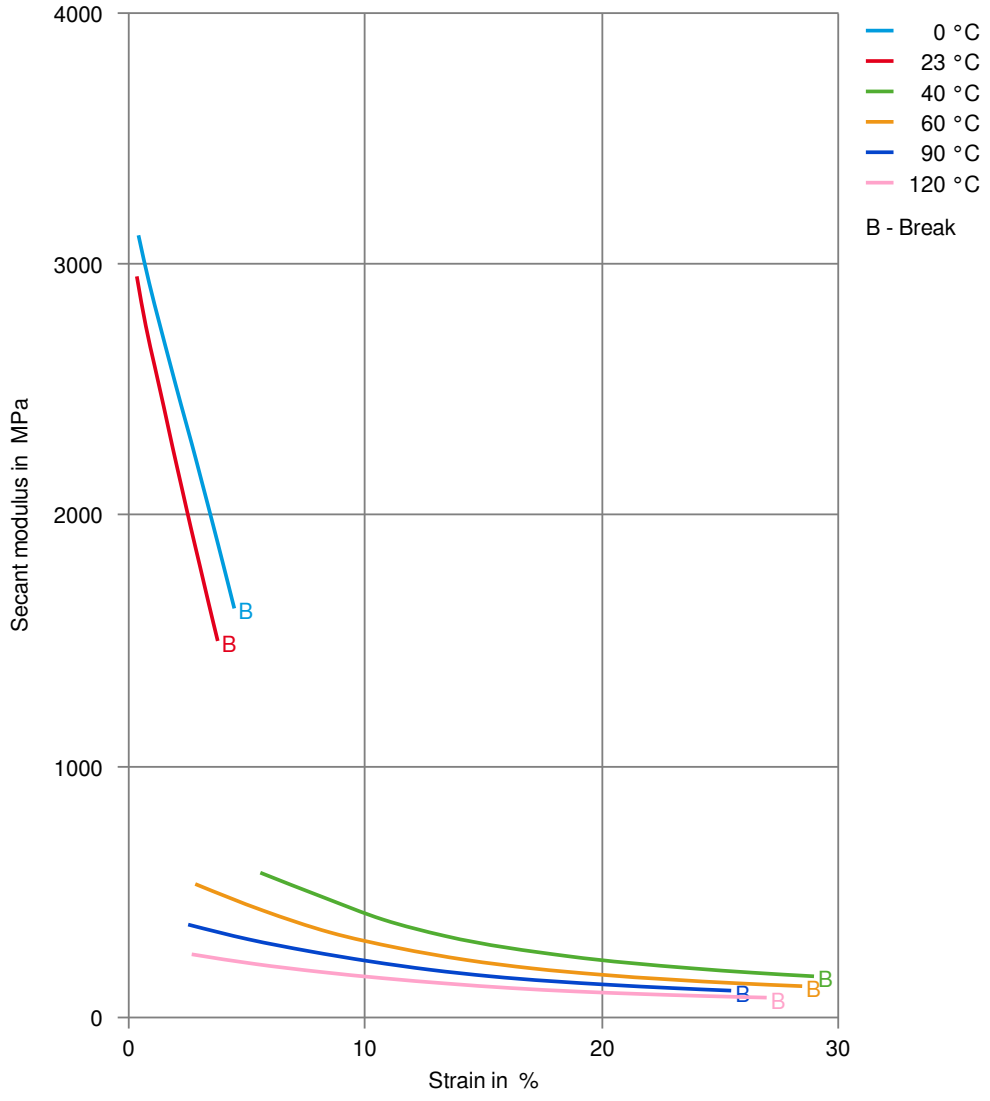
Secant modulus-strain (dry)



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Secant modulus-strain (cond.)