

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] /*	cm ³ /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/m ²	ISO 179/1eU
Charpy impact strength, -30°C	N / N	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	4.2 / 8	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	4.2 / 4	kJ/m ²	ISO 179/1eA
Izod notched impact strength, 23°C	4 / 6	kJ/m ²	ISO 180/1A
Izod notched impact strength, -30°C	5.0 / 4.5	kJ/m ²	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/m ³	ISO 1183
Density of melt	900	kg/m ³	

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

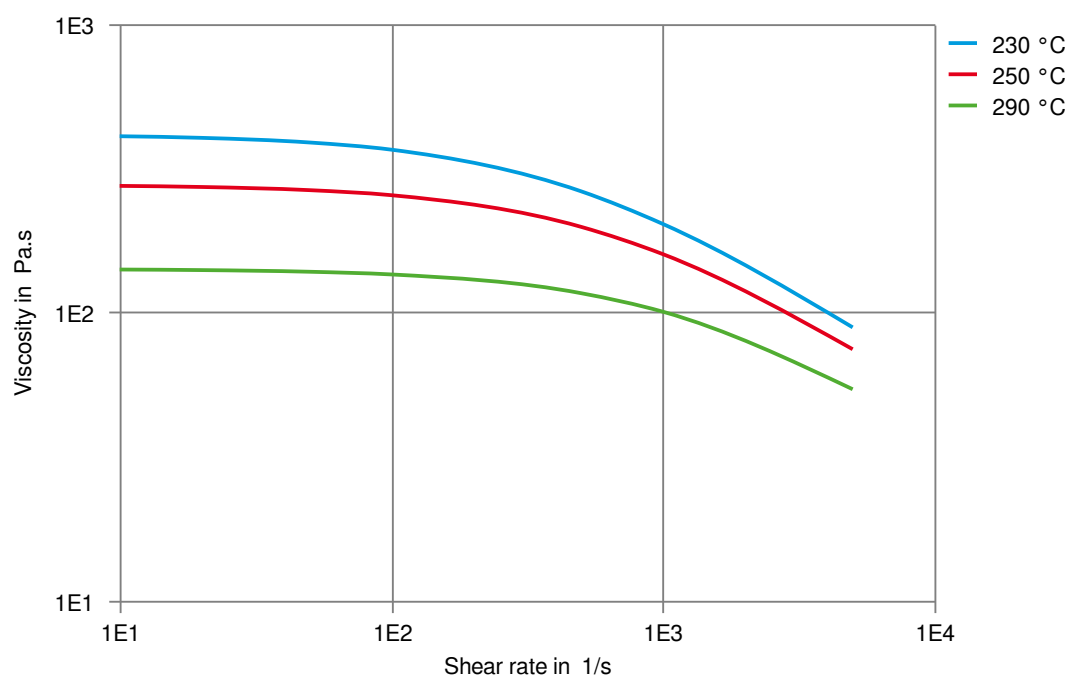
Characteristics

Processing	Injection Moulding, Other Extrusion, Coatable
Delivery form	Pellets

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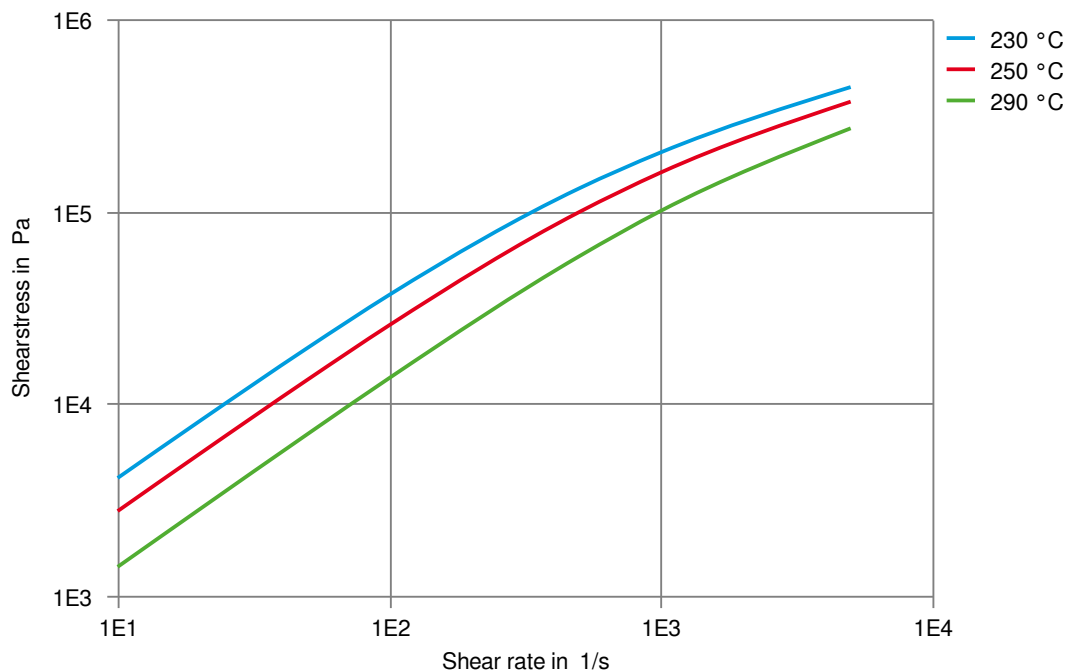
Viscosity-shear rate



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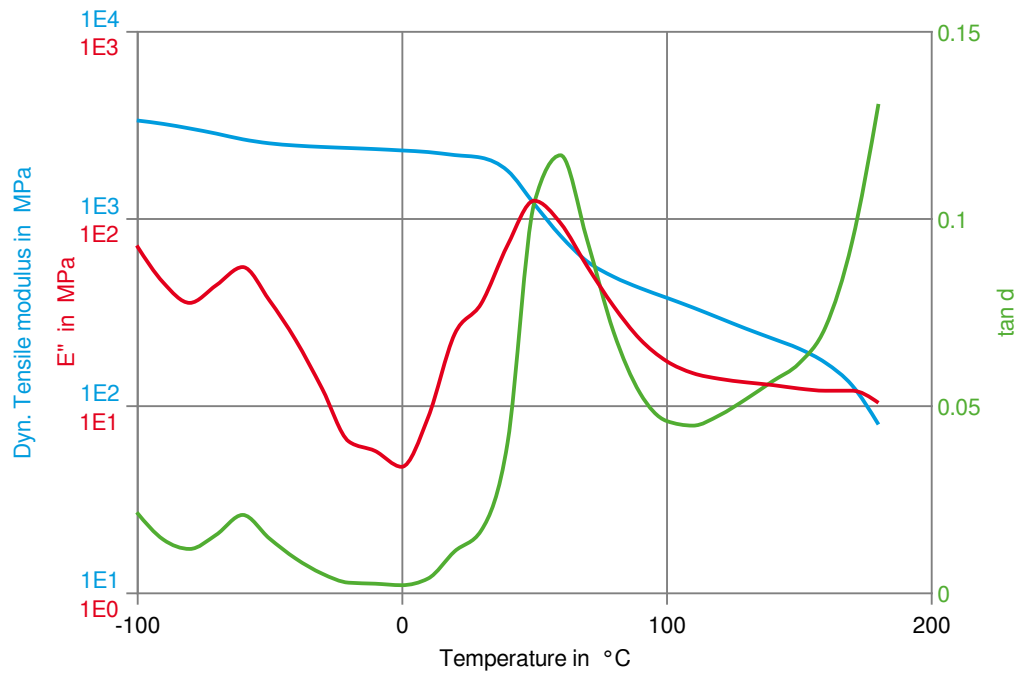
Shearstress-shear rate



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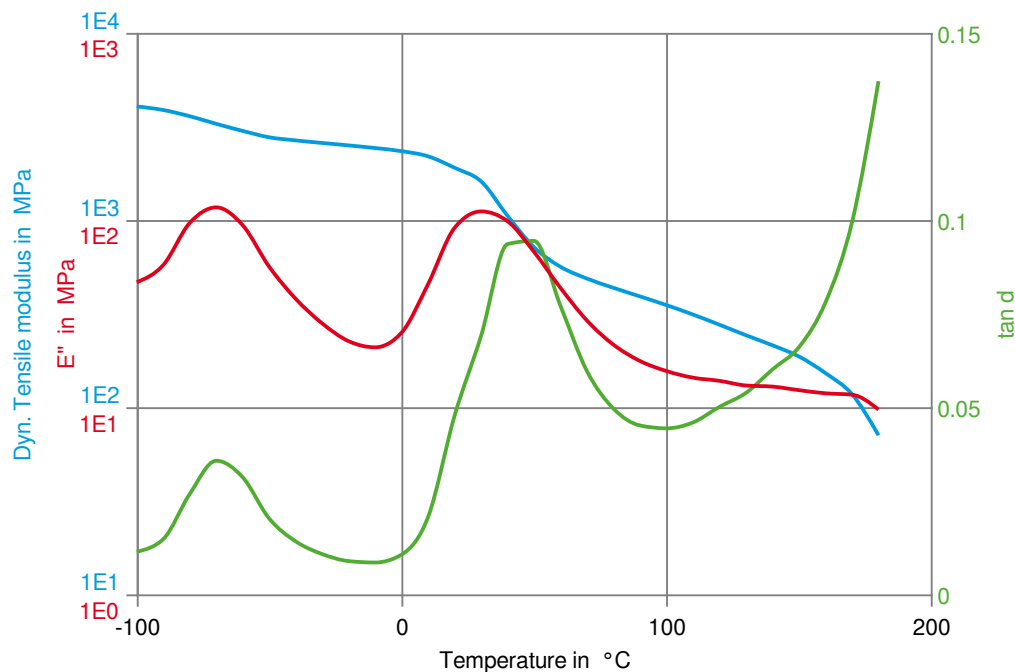
Dynamic Tensile modulus-temperature (dry)



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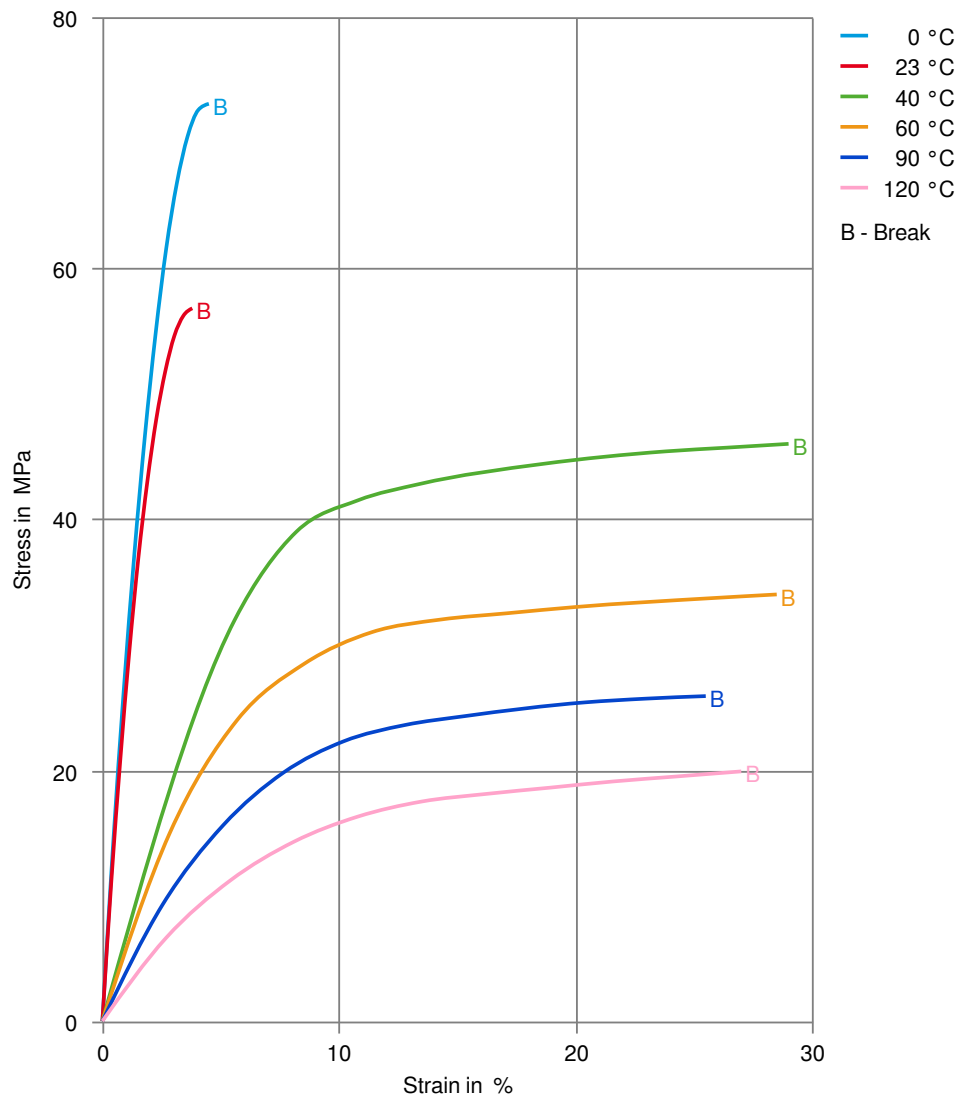
Dynamic Tensile modulus-temperature (cond.)



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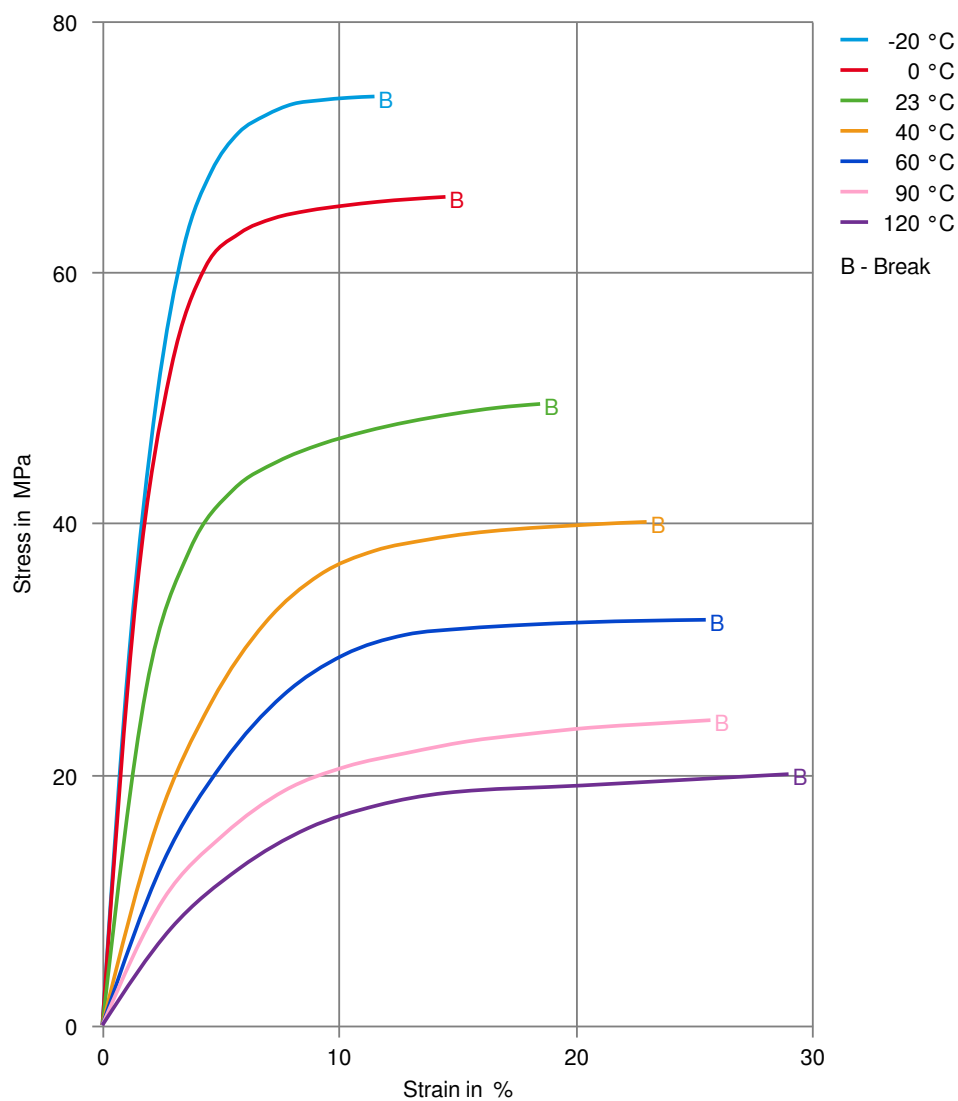
Stress-strain (dry)



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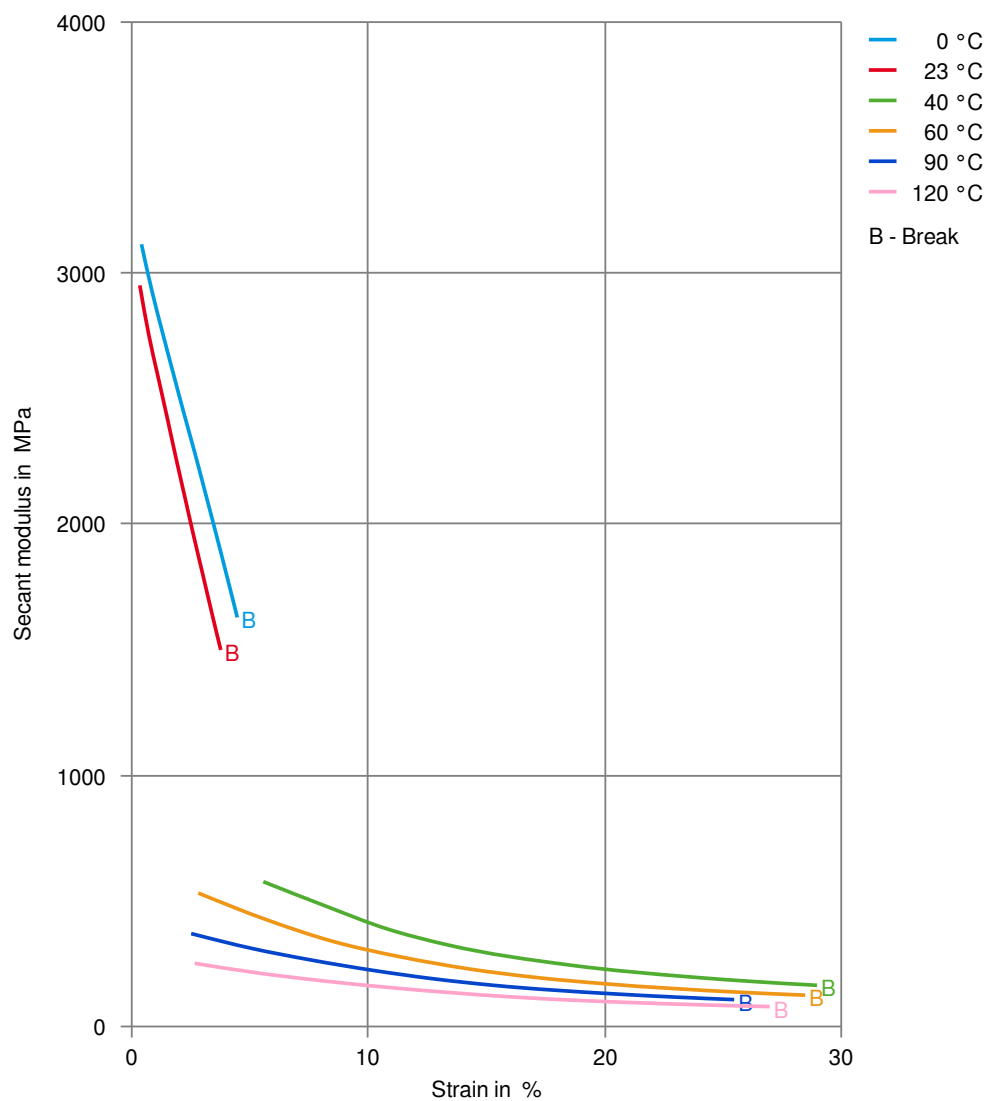
Stress-strain (cond.)



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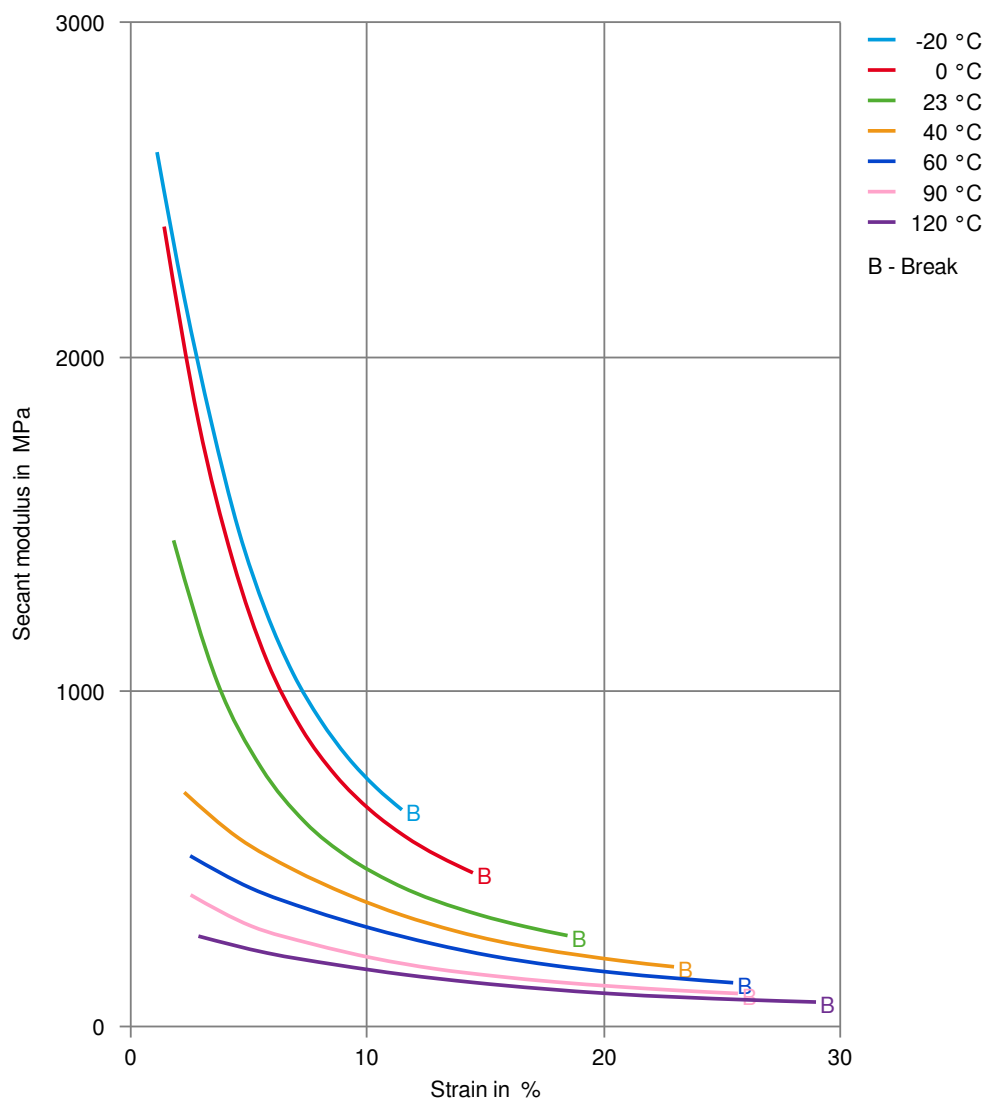
Secant modulus-strain (dry)



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Secant modulus-strain (cond.)



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