

Zytel® 77G43L 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® 77G43L NC010 is a 43% glass fiber reinforced polyamide 612 resin for injection moulding.

Product information

Resin Identification	PA612-GF43	ISO 1043
Part Marking Code	>PA612-GF43<	ISO 11469
ISO designation	ISO 16396-PA612,GF43,M1GNR,S14-120	

Rheological properties

	dry/cond.		
Viscosity number	145 / *	cm ³ /g	ISO 307, 1628
Moulding shrinkage, parallel	0.3 / -	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.8 / -	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile modulus	12500 / 11500	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	200 / 165	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	3 / 5	%	ISO 527-1/-2
Flexural modulus	11000 / -	MPa	ISO 178
Charpy impact strength, 23°C	100 / 100	kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	85 / 80	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	17 / 14	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	17 / 13	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -40°C	17 / -	kJ/m ²	ISO 179/1eA
Izod notched impact strength, 23°C	17 / -	kJ/m ²	ISO 180/1A
Izod notched impact strength, -40°C	15.0 / -	kJ/m ²	ISO 180/1A
Hardness, Rockwell, R-scale	118 / -		ISO 2039-2
Poisson's ratio	0.33 / 0.33		

Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	218 / *	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	65 / 55	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	203 / *	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	217 / *	°C	ISO 75-1/-2
Coeff. of linear therm. expansion, parallel, -40-23°C	21 / *	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), parallel	14 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel, 55-160°C	13 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23°C	75 / *	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	110 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, 55-160°C	140 / *	E-6/K	ISO 11359-1/-2
RTI, electrical, 0.75mm	105	°C	UL 746B
RTI, electrical, 1.5mm	120	°C	UL 746B

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RTI, strength, 1.5mm	120 / *	°C	UL 746B
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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	0.71 / *	mm	IEC 60695-11-10
UL recognition	yes / *		UL 94
Glow Wire Flammability Index, 1.0mm	750 / -	°C	IEC 60695-2-12
Glow Wire Flammability Index, 2.0mm	750 / -	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	775 / -	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 1.0mm	750 / -	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 2.0mm	750 / -	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 3.0mm	775 / -	°C	IEC 60695-2-13
FMVSS Class	B		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	21	mm/min	ISO 3795 (FMVSS 302)

Electrical properties

	dry/cond.		
Relative permittivity, 1MHz	3.6 / -		IEC 62631-2-1
Dissipation factor, 1MHz	200 / -	E-4	IEC 62631-2-1
Volume resistivity	1E13 / -	Ohm.m	IEC 62631-3-1

Physical/Other properties

	dry/cond.		
Humidity absorption, 2mm	0.7 / *	%	Sim. to ISO 62
Water absorption, 2mm	1.7 / *	%	Sim. to ISO 62
Water absorption, Immersion 24h	0.1 / *	%	Sim. to ISO 62
Density	1420 / -	kg/m ³	ISO 1183

VDA Properties

	dry/cond.		
Fogging, G-value (condensate)	0.1 / *	mg	ISO 6452

Injection

Drying Recommended	yes
Drying Temperature	80 °C
Drying Time, Dehumidified Dryer	2 - 4 h
Processing Moisture Content	≤0.2 %
Melt Temperature Optimum	290 °C
Min. melt temperature	280 °C
Max. melt temperature	300 °C
Screw tangential speed	≤0.2 m/s
Mold Temperature Optimum	100 °C
Min. mould temperature	70 °C
Max. mould temperature	120 °C
Hold pressure range	50 - 100 MPa
Hold pressure time	3 s/mm
Ejection temperature	210 °C

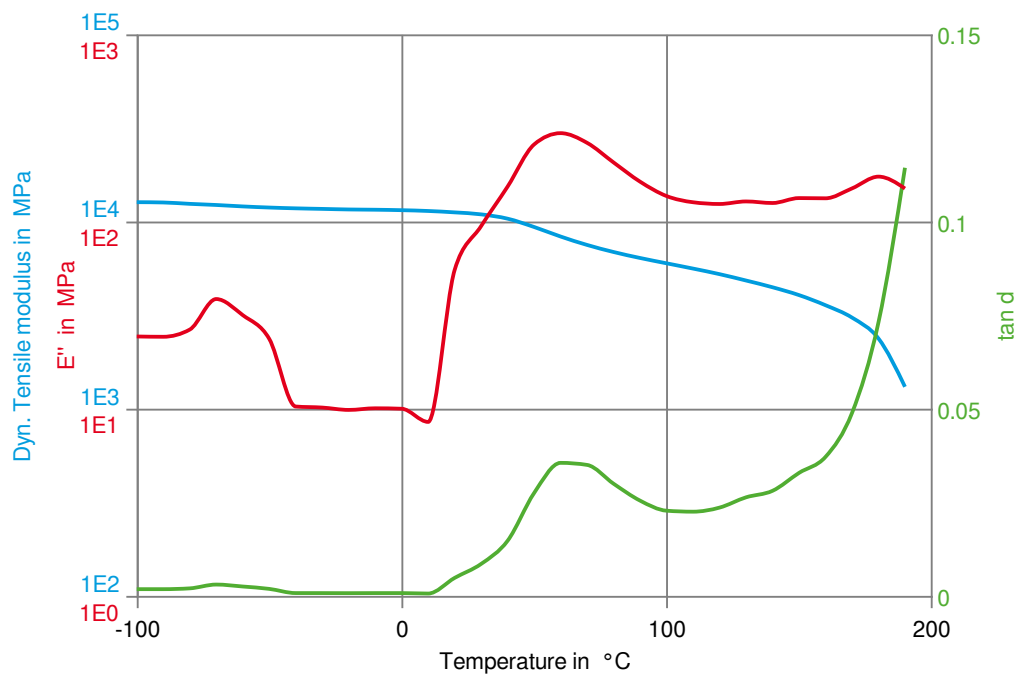
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Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Release agent

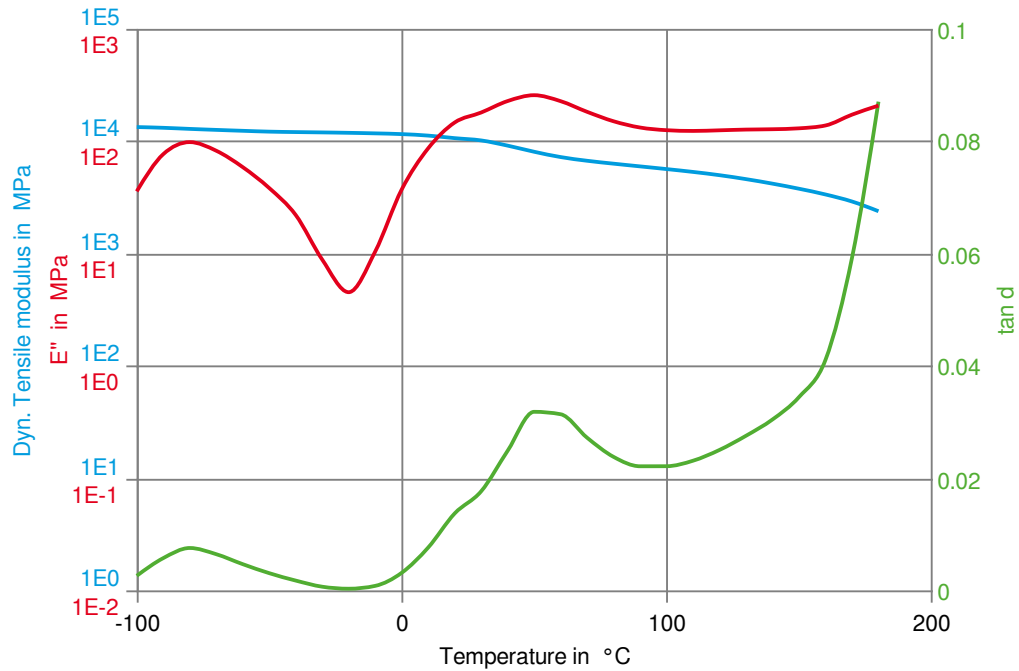
Dynamic Tensile modulus-temperature (dry)



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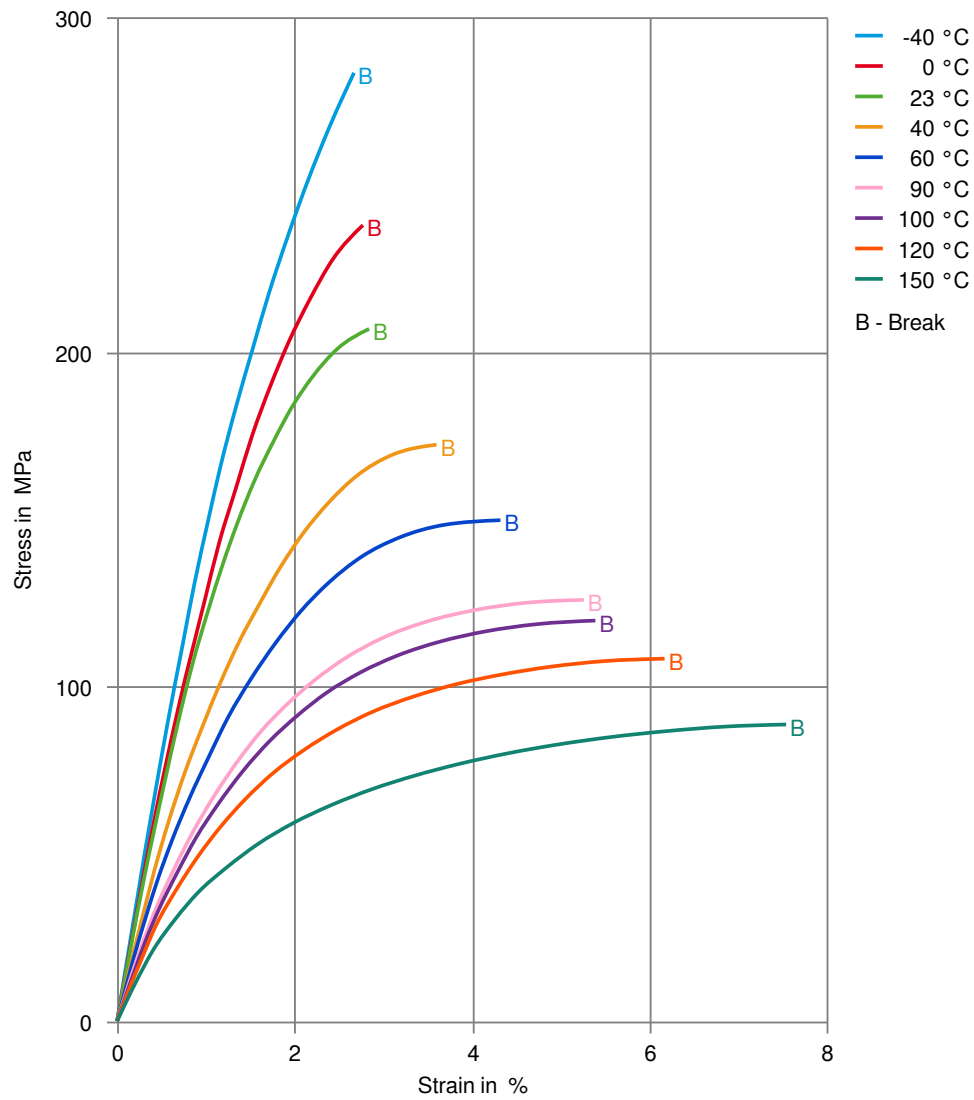
Dynamic Tensile modulus-temperature (cond.)



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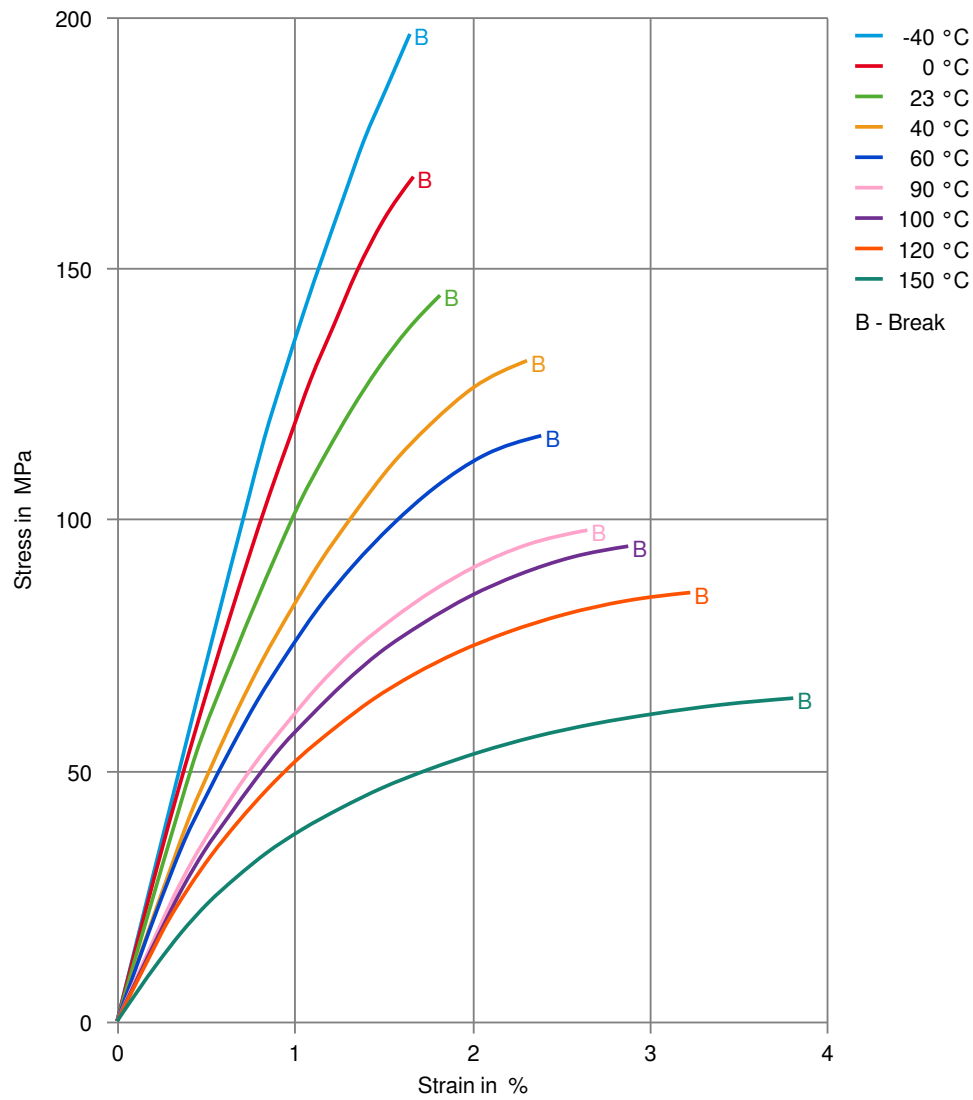
Stress-strain (dry)



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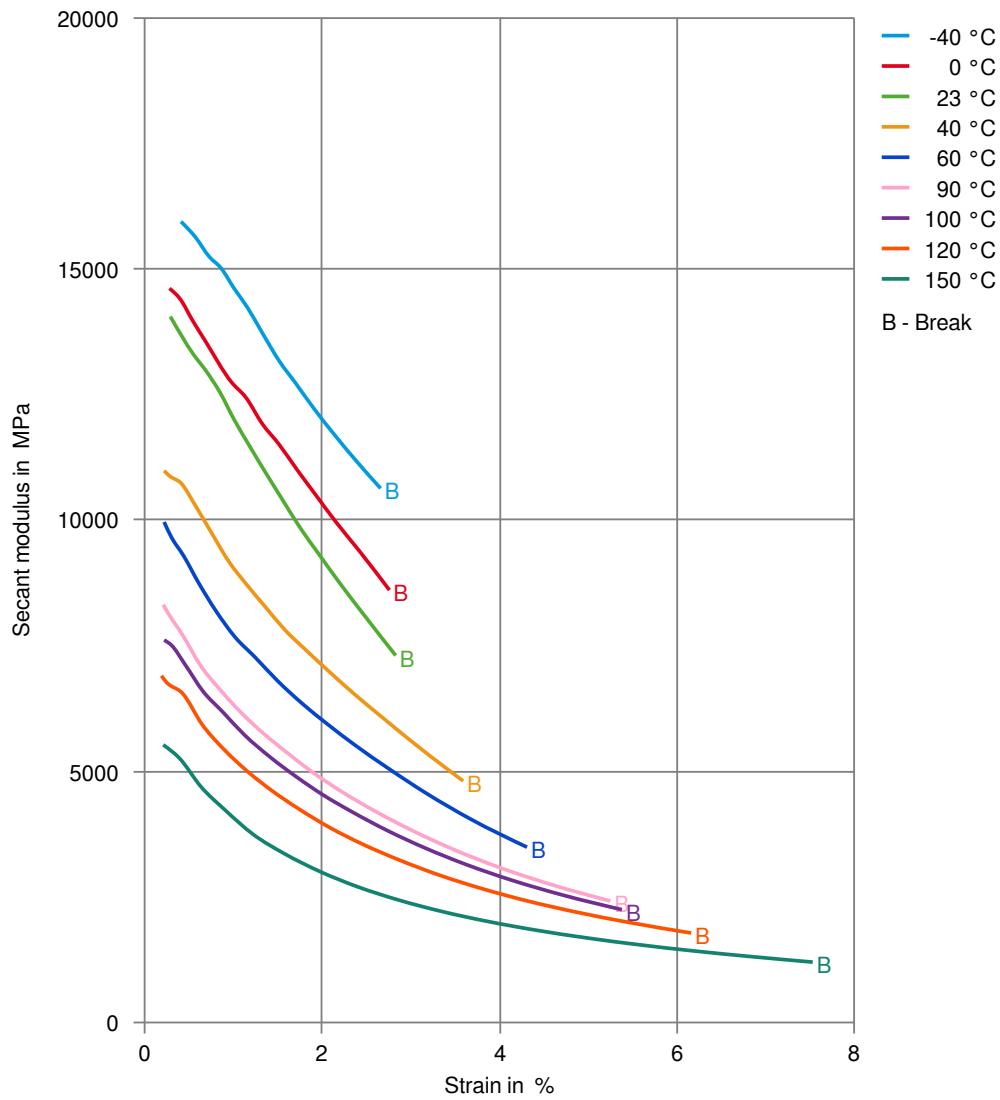
Stress-strain (cond.)



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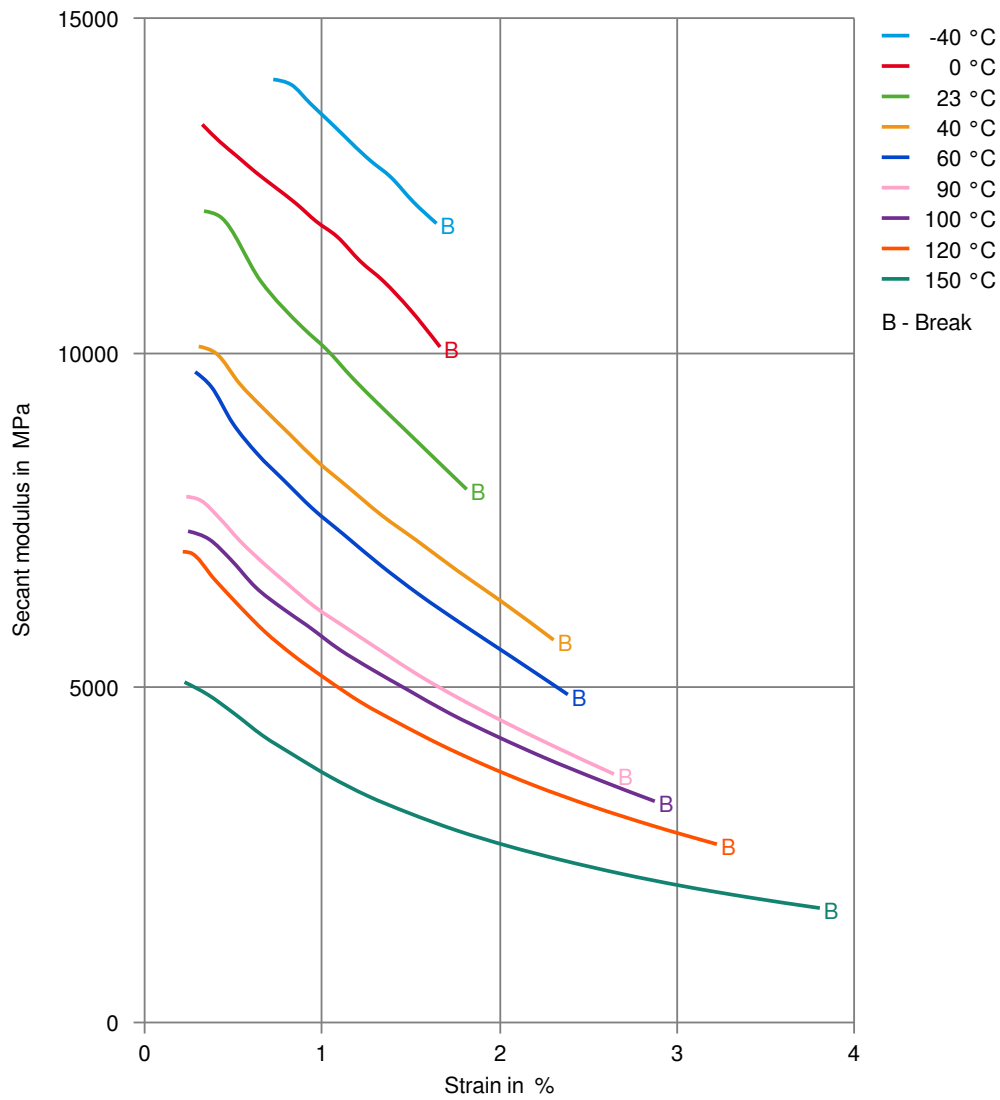
Secant modulus-strain (dry)



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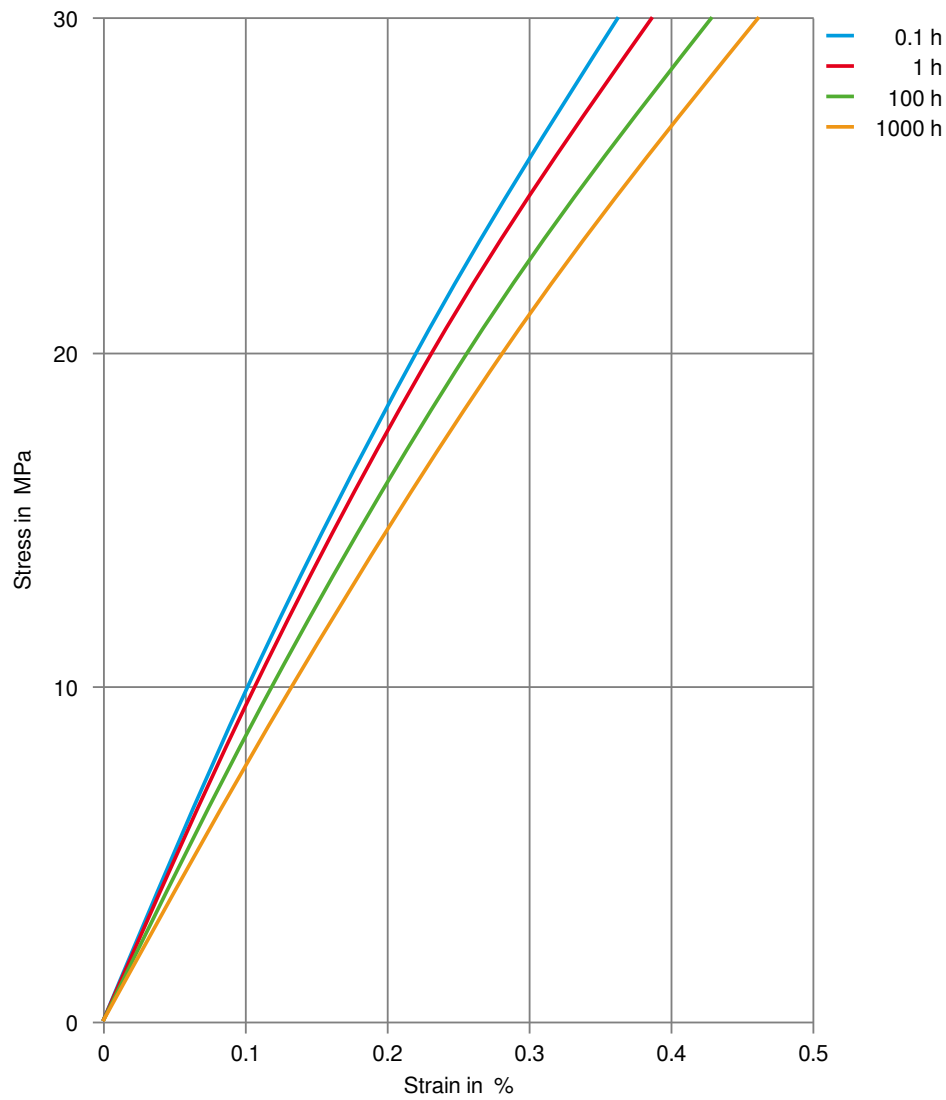
Secant modulus-strain (cond.)



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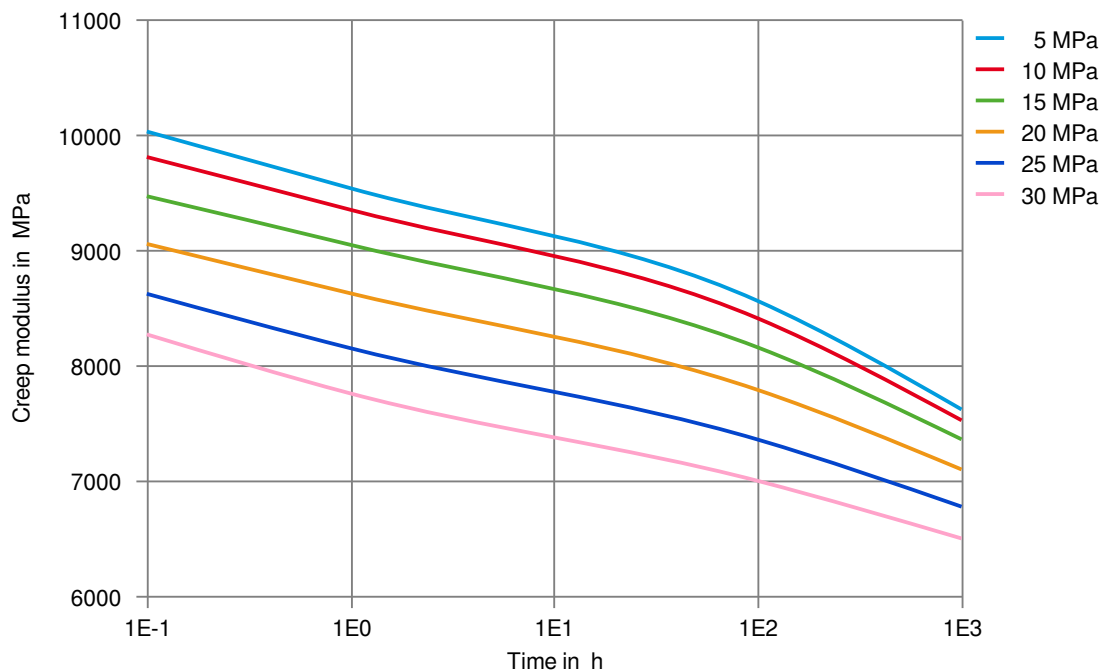
Stress-strain (isochronous) 23°C (cond.)



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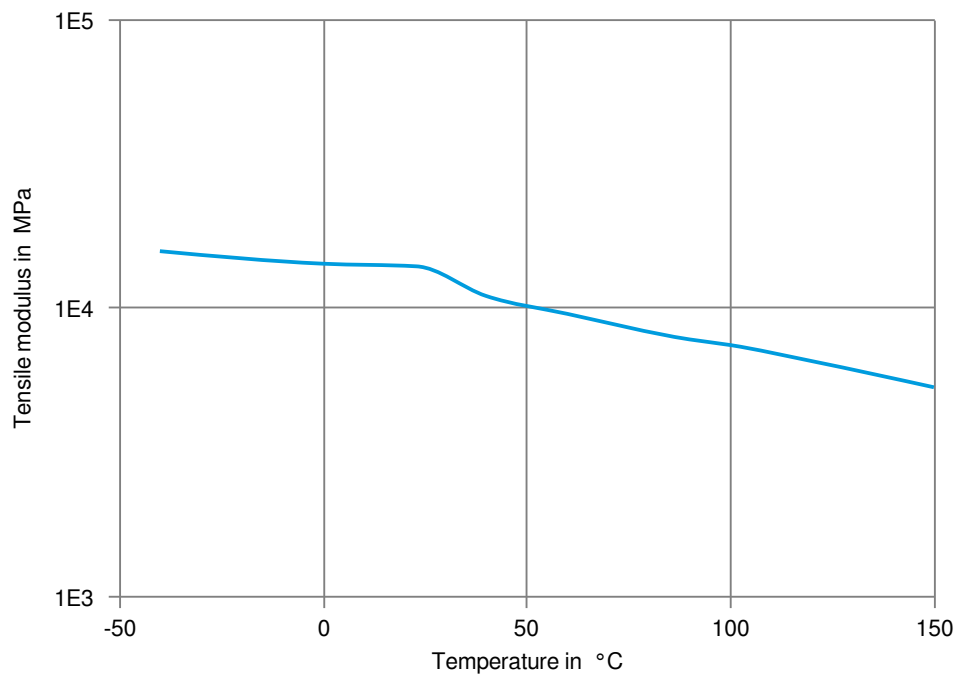
Creep modulus-time 23°C (cond.)



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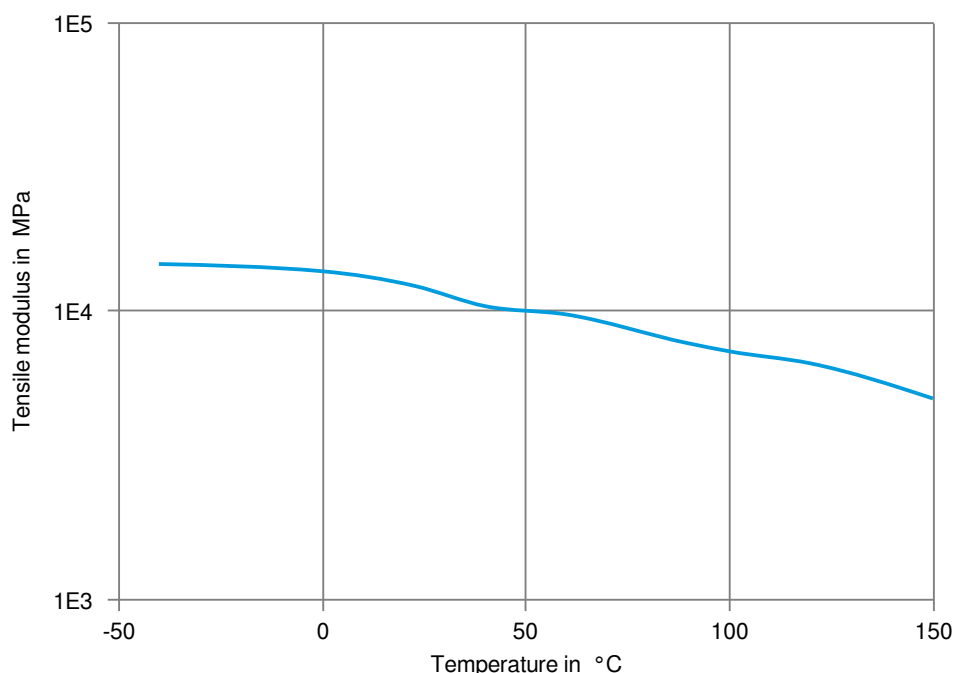
Tensile modulus-temperature (dry)



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Tensile modulus-temperature (cond.)



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