

# Zytel® HTNFR52G30NH BK337

## HIGH PERFORMANCE POLYAMIDE RESIN

Zytel® HTN high performance polyamide resins feature high retention of properties upon exposure to elevated temperature, to high moisture, and to harsh chemical environments. Polymer families and grades of Zytel® HTN are tailored to optimize performance as well as processability.

Typical applications with Zytel® HTN include demanding applications in the automotive, electrical and electronics, domestic appliances, and construction industries.

Zytel® HTNFR52G30NH BK337 is a 30% glass reinforced, flame retardant high performance polyamide resin. It is also a PPA resin and it uses a non-halogenated flame retardant.

### Product information

Resin Identification	PA6T/66-GF30FR(40)	ISO 1043
Part Marking Code	>PA6T/66-GF30FR(40)<	ISO 11469
Part Marking Code	>PPA-GF30FR<	SAE J1344
ISO designation	ISO 16396-PA6T/66,GF30 FR(40),M1CF1GR,S10-100	

### Rheological properties

	dry/cond.		
Moulding shrinkage, parallel	0.3 / -	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.1 / -	%	ISO 294-4, 2577

### Typical mechanical properties

	dry/cond.		
Tensile modulus	10500 / 10500	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	150 / 125	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	2.2 / 2	%	ISO 527-1/-2
Flexural modulus	10000 / 10000	MPa	ISO 178
Flexural strength	230 / 200	MPa	ISO 178
Charpy impact strength, 23°C	45 / 40	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy impact strength, -30°C	40 / 35	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, 23°C	8 / 7	kJ/m <sup>2</sup>	ISO 179/1eA
Charpy notched impact strength, -30°C	7 / 7	kJ/m <sup>2</sup>	ISO 179/1eA
Hardness, Rockwell, M-scale	95 / -		ISO 2039-2
Hardness, Rockwell, R-scale	120 / -		ISO 2039-2
Poisson's ratio	0.34 / 0.34		

### Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	310 / *	°C	ISO 11357-1/-3
Melting temperature, first heat	310 / *	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	90 / 45	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	283 / *	°C	ISO 75-1/-2
Ball pressure test	290 / -	°C	IEC 60695-10-2
Coeff. of linear therm. expansion, parallel, -40-23°C	20 / *	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), parallel	20 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel, 55-160°C	18 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23°C	54 / *	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	55 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, 55-160°C	91 / *	E-6/K	ISO 11359-1/-2

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RTI, electrical, 0.4mm	140	°C	UL 746B
RTI, electrical, 0.75mm	140	°C	UL 746B
RTI, electrical, 1.5mm	140	°C	UL 746B
RTI, electrical, 3.0mm	140	°C	UL 746B
RTI, impact, 0.75mm	115	°C	UL 746B
RTI, impact, 1.5mm	115	°C	UL 746B
RTI, impact, 3.0mm	120	°C	UL 746B
RTI, strength, 0.75mm	125	°C	UL 746B
RTI, strength, 1.5mm	125/*	°C	UL 746B
RTI, strength, 3.0mm	130	°C	UL 746B
TGA curve	available		ISO 11359-1/-2

### Flammability

		dry/cond.	
Burning Behav. at 1.5mm nom. thickn.	V-0/*	class	IEC 60695-11-10
Thickness tested	1.5/*	mm	IEC 60695-11-10
UL recognition	yes/*		UL 94
Burning Behav. at thickness h	V-0/*	class	IEC 60695-11-10
Thickness tested	0.4/*	mm	IEC 60695-11-10
UL recognition	yes/*		UL 94
Oxygen index	37/*	%	ISO 4589-1/-2
Glow Wire Flammability Index, 0.75mm	960/-	°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	700/-	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 3.0mm	775/-	°C	IEC 60695-2-13
FMVSS Class	DNI		ISO 3795 (FMVSS 302)
Railway classification	R23/-		EN 45545-2
Railway classification rating	HL2/-		EN 45545-2

### Electrical properties

		dry/cond.	
Relative permittivity, 100Hz	4.3/-		IEC 62631-2-1
Relative permittivity, 1MHz	4/-		IEC 62631-2-1
Dissipation factor, 100Hz	70/-	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	130/-	E-4	IEC 62631-2-1
Volume resistivity	>1E13/-	Ohm.m	IEC 62631-3-1
Surface resistivity	*/>1E15	Ohm	IEC 62631-3-2
Electric strength	33/-	kV/mm	IEC 60243-1
Comparative tracking index	600/-		IEC 60112
Comparative tracking index, 3.0mm	0/-	PLC	UL 746A
Electric Strength, Short Time, 2mm	26/-	kV/mm	IEC 60243-1
Dielectric Constant, 1 GHz	3.7/-		ASTM D 2520 B
Dielectric Constant, 23°C, 10 GHz	3.8/-		ASTM D 2520 B / IPC-TM-650
Dissipation Factor, 1 GHz	120/-	E-4	ASTM D 2520 B
Dissipation Factor, 23°C, 10 GHz	100/-	E-4	ASTM D 2520 B / IPC-TM-650

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### Physical/Other properties

	dry/cond.		
Humidity absorption, 2mm	1.6 / *	%	Sim. to ISO 62
Water absorption, 2mm	3.9 / *	%	Sim. to ISO 62
Density	1440 / -	kg/m <sup>3</sup>	ISO 1183

### VDA Properties

Emission of organic compounds	10 µgC/g	VDA 277
Odour	3.5 class	VDA 270

### Injection

Drying Recommended	yes
Drying Temperature	100 °C
Drying Time, Dehumidified Dryer	6 - 8 h
Processing Moisture Content	≤0.1 %
Min. melt temperature	320 °C
Max. melt temperature	325 °C
Min. mould temperature	90 °C
Max. mould temperature	130 °C

### Characteristics

Processing	Injection Moulding
Additives	Flame retardant, Non-halogenated/Red phosphorous free flame retardant
Special characteristics	Flame retardant, Lead-free soldering resistant

### Additional information

Injection molding	For molding machine components, use corrosion resistant and wear resistant steel. For details please contact our representative. Limit the residence time of the resin in the machine. Use proper protective equipment and adequate ventilation.
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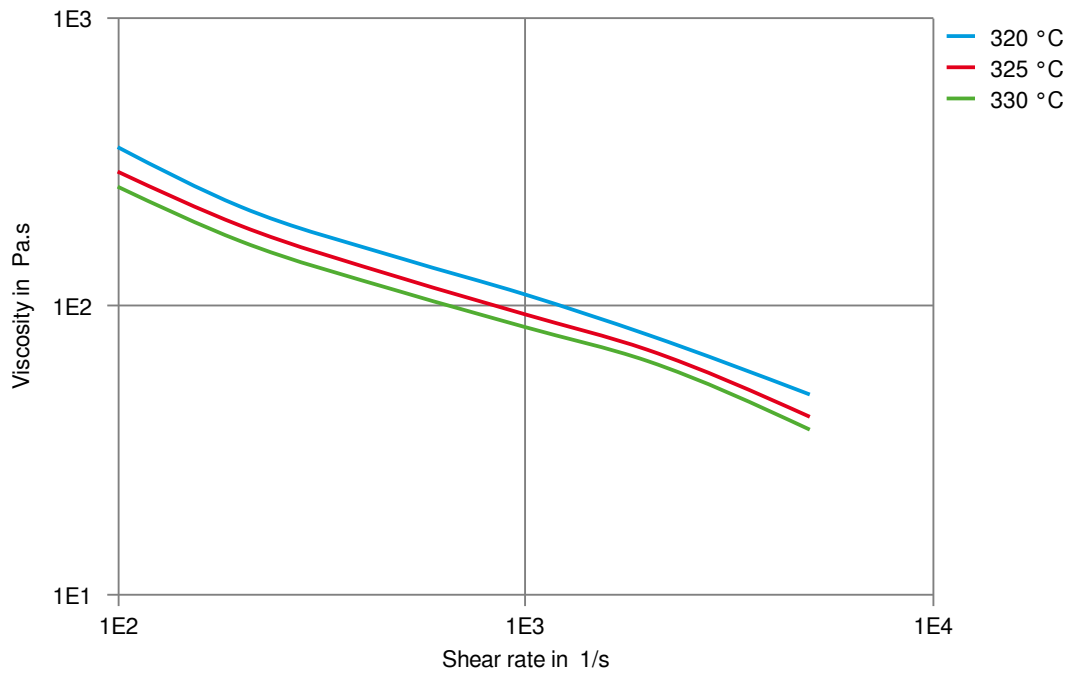
### Automotive

OEM	STANDARD	ADDITIONAL INFORMATION
Renault-Nissan	UB21c, No Spec, Special Part Approval, See Your CE Account Manager.	
Renault-Nissan	UB25c, No Spec, Special Part Approval, See Your CE Account Manager.	
Stellantis	B62 0300 / 61/223E-219M/C4	01378_19_02660

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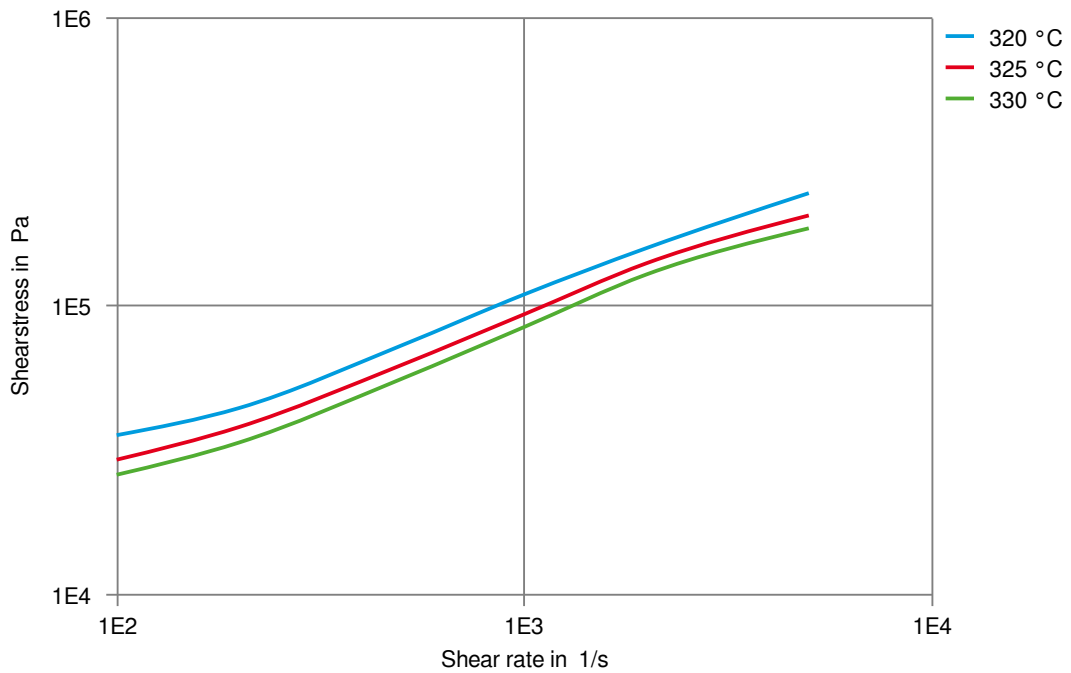
### Viscosity-shear rate



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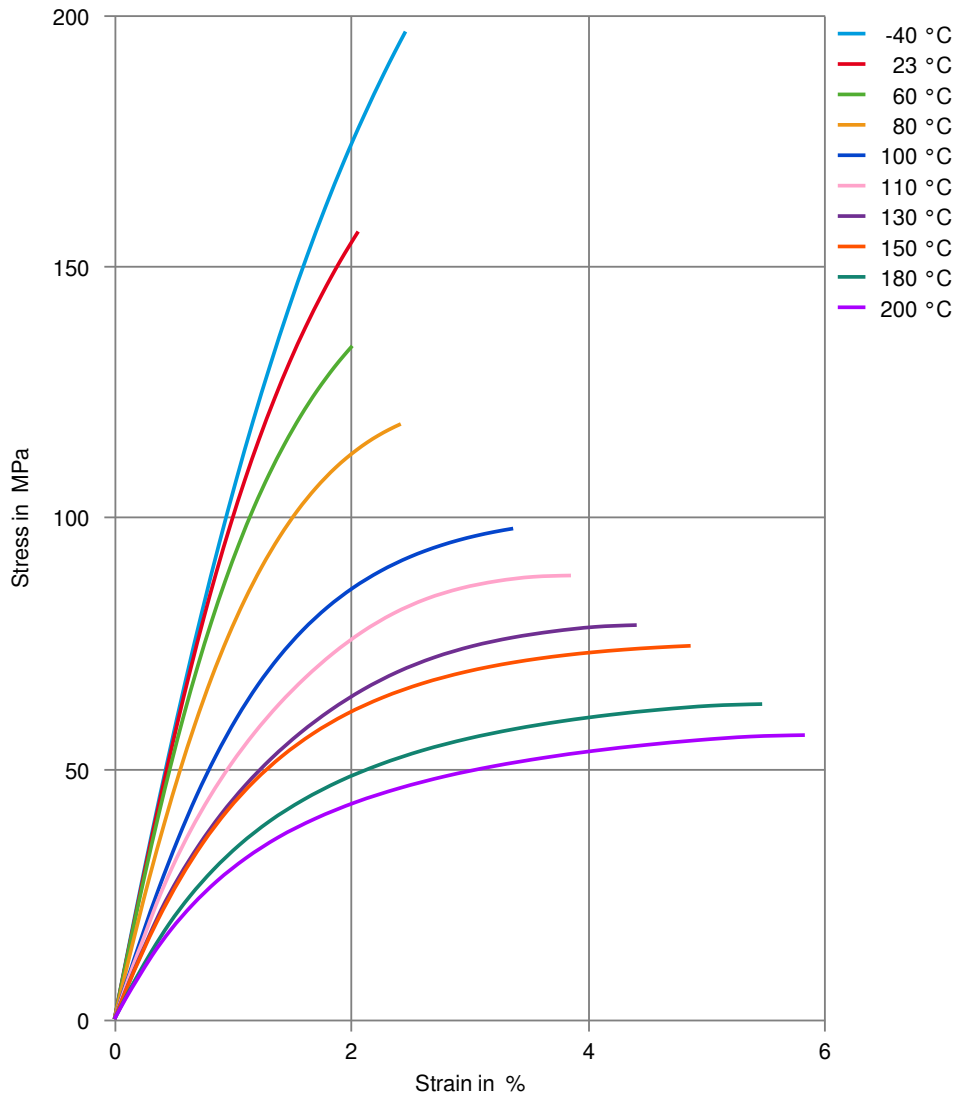
### Shearstress-shear rate



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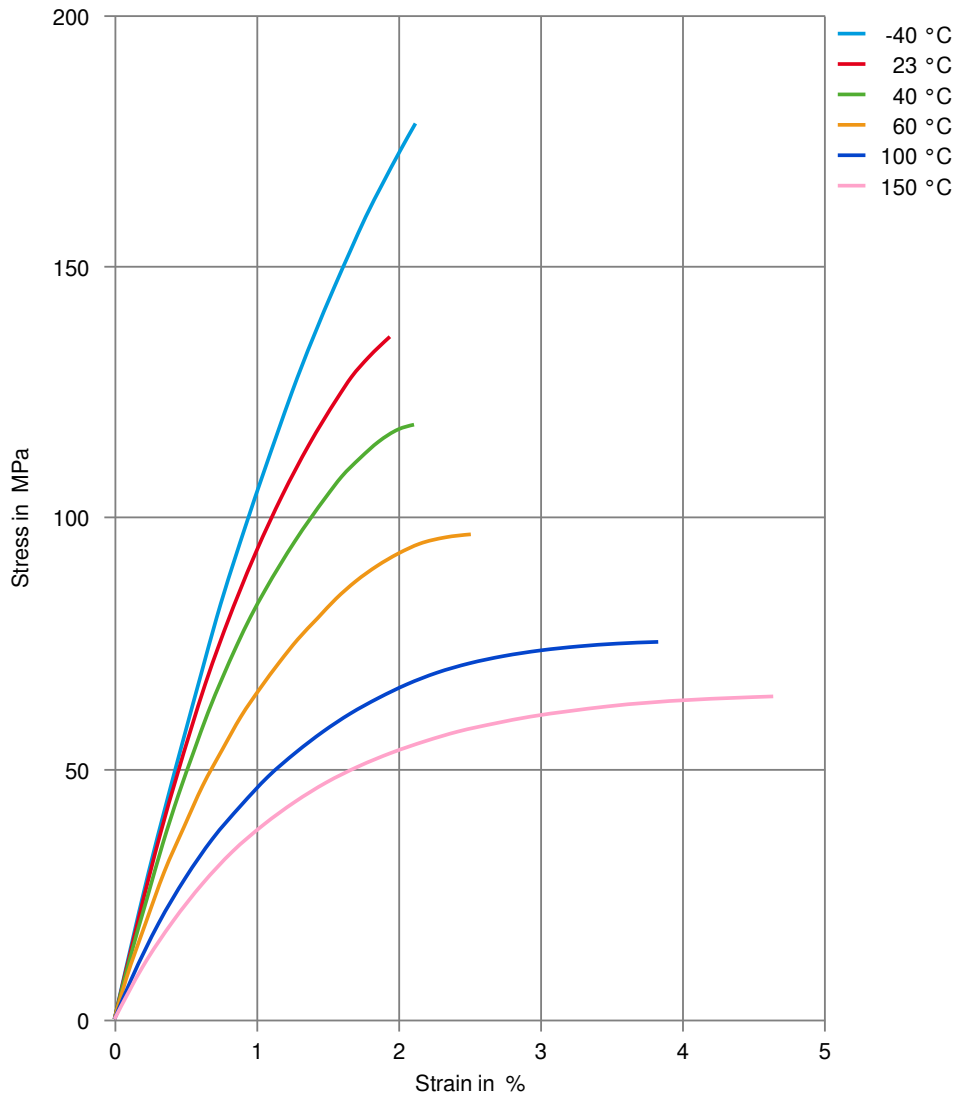
## Stress-strain (dry)



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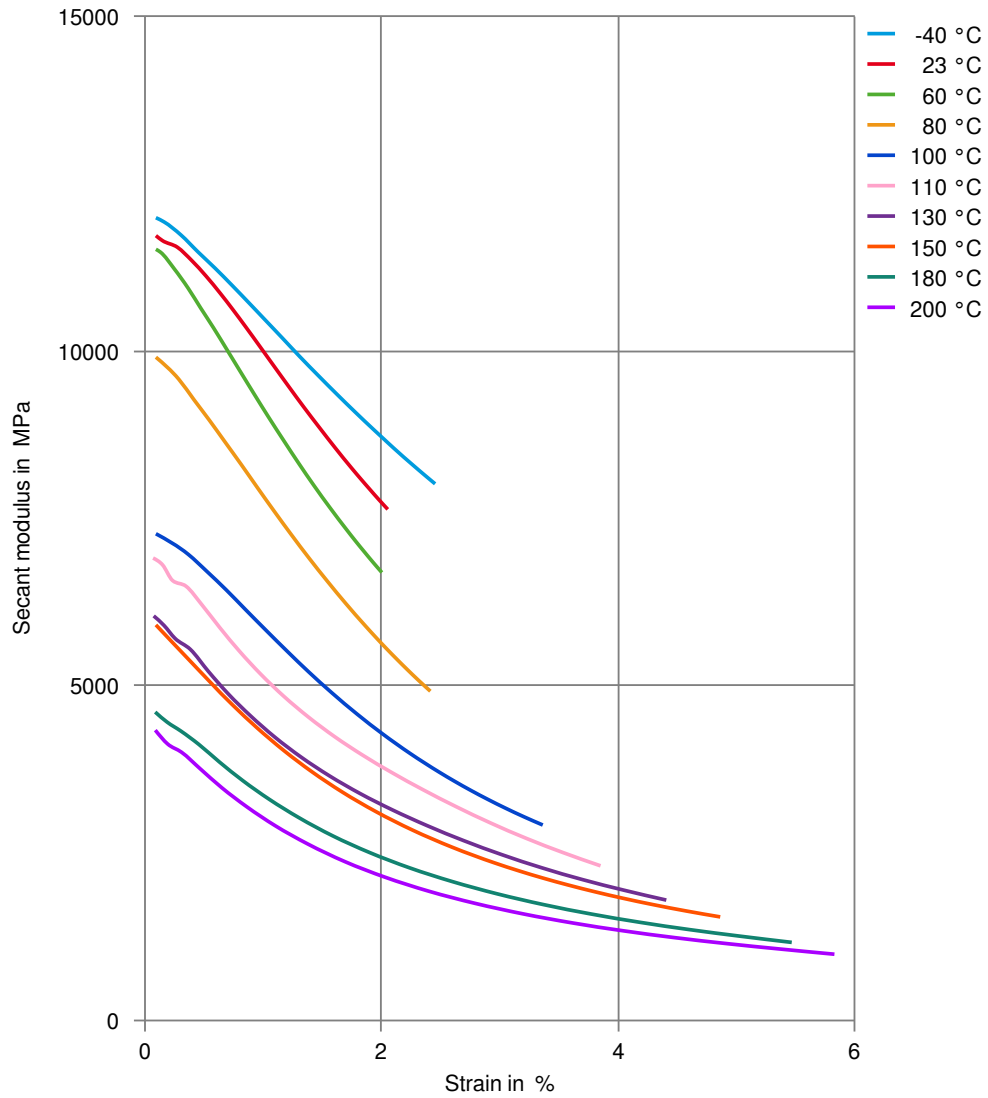
## Stress-strain (cond.)



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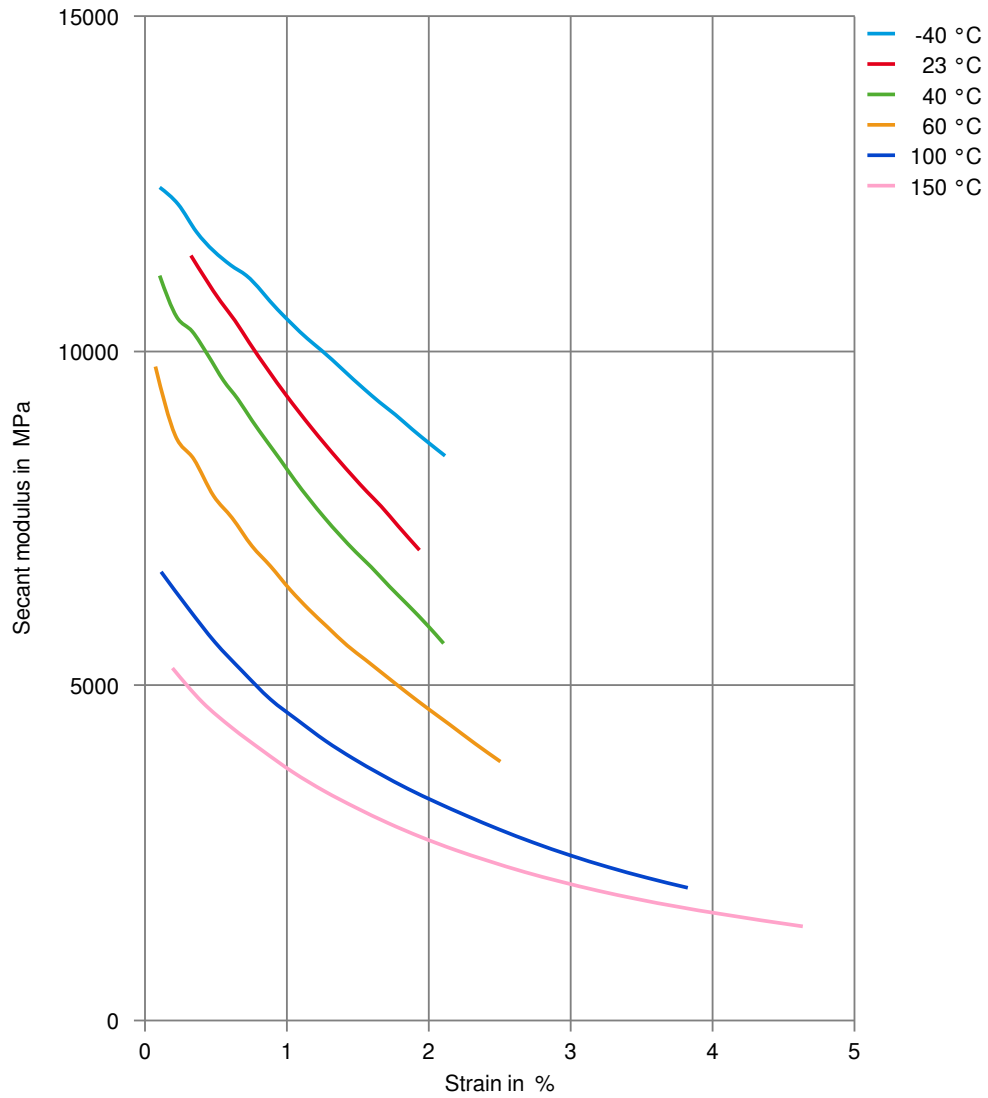
## Secant modulus-strain (dry)



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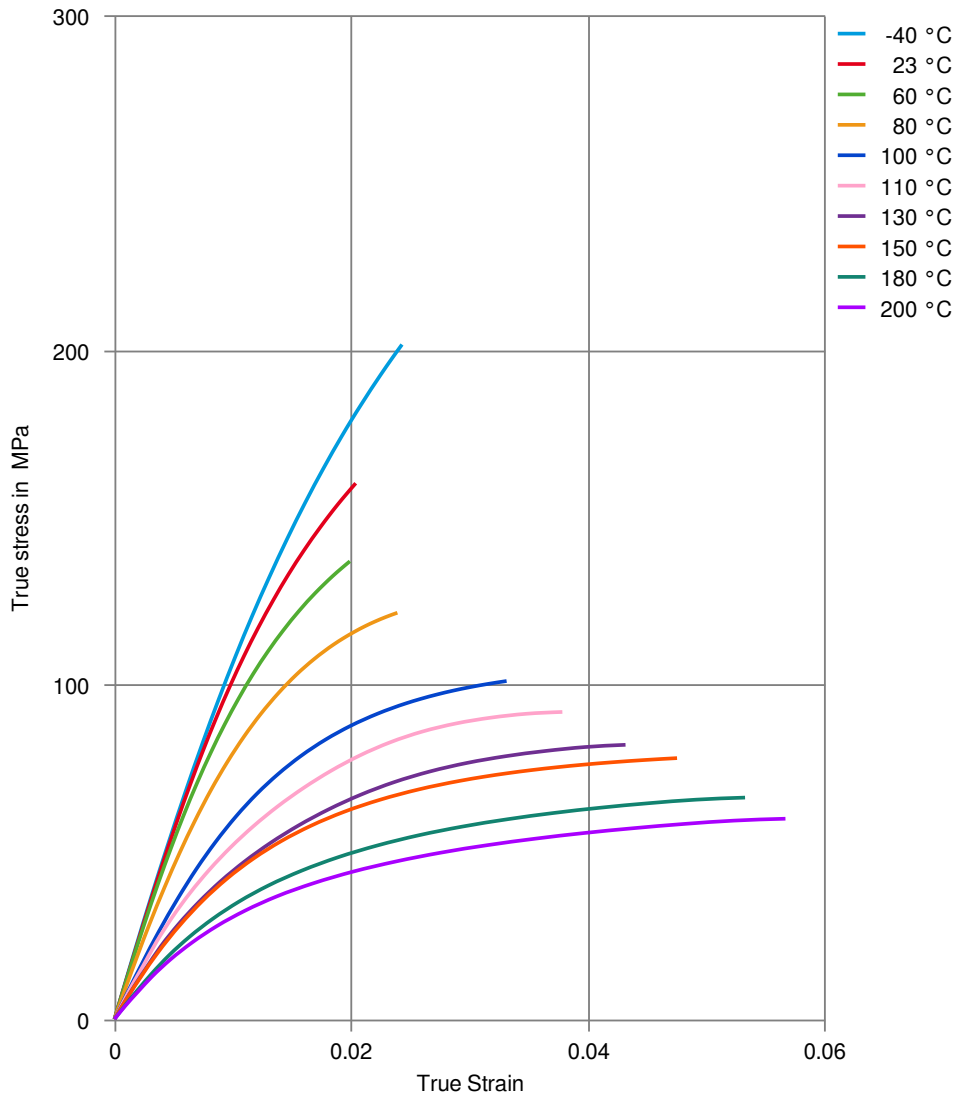
## Secant modulus-strain (cond.)



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## True stress-strain (dry)



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## True stress-strain (cond.)

