Zytel® HTNFR52G30BL 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® HTNFR52G30BL BK337 is a 30% glass reinforced, flame retardant, lubricated high performance polyamide resin that has been developed for connector applications.

Product information

Resin Identification	PA6T/66-GF30 FR(16+72)	ISO 1043
Part Marking Code	>PA6T/66-GF30 FR(16+72)<	ISO 11469
Part Marking Code	>PPA-GF30 FR<	SAE J1344
ISO designation	ISO 16396-PA6T/66,GF30 FR(16+72),M1CF1GR,S10-120	

Rheological properties

	dry/cond.		
Molding shrinkage, parallel	0.3 / -	%	ISO 294-4, 2577
Molding shrinkage, normal	0.8 / -	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile modulus	1.71E6 / -	psi	ISO 527-1/-2
Tensile stress at break, 5mm/min	23200 / -	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	2 / -	%	ISO 527-1/-2
Flexural modulus	1.45E6 / -	psi	ISO 178
Flexural strength	34800 / 30500	psi	ISO 178
Charpy impact strength, 23°C	23.8 / 16.6	ftlb/in²	ISO 179/1eU
Charpy impact strength, -30°C	19 / 16.6	ftlb/in²	ISO 179/1eU
Charpy notched impact strength, 23°C	4.76 / -	ftlb/in²	ISO 179/1eA
Charpy notched impact strength, -30°C	4.76 / -	ftlb/in²	ISO 179/1eA

Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	590 / *	°F	ISO 11357-1/-3
Melting temperature, first heat	590 / *	°F	ISO 11357-1/-3
Glass transition temperature, 10°C/min	194 / 113	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	540 / *	°F	ISO 75-1/-2
Coefficient of linear thermal expansion (CLTE), parallel	0.11 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), parallel, -40-23°C	0.111 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), parallel, 55-160°C	0.0556 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	0.35 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal, -40-23°C	0.317 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal, 55-160°C	0.556 / *	E-4/°F	ISO 11359-1/-2

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RTI, electrical, 1.5mm	284	°F	UL 746B
RTI, electrical, 3.0mm	284	°F	UL 746B
RTI, impact, 1.5mm	248	°F	UL 746B
RTI, impact, 3.0mm	248	°F	UL 746B
RTI, strength, 1.5mm	248 / *	°F	UL 746B
RTI, strength, 3.0mm	266	°F	UL 746B

Flammability

	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	V-0 / *	class	IEC 60695-11-10
Thickness tested	0.0591 / *	in	IEC 60695-11-10
UL recognition	yes / *		UL 94
Burning Behav. at thickness h	V-0 / *	class	IEC 60695-11-10
Thickness tested	0.1181 / *	in	IEC 60695-11-10
UL recognition	yes / *		UL 94
Burning Behav. 5V at thickness h	5VA / *	class	IEC 60695-11-20
Thickness tested	0.0591 / *	in	IEC 60695-11-20
UL recognition	yes / *		UL 94
Oxygen index	42 / *	%	ISO 4589-1/-2
Glow Wire Flammability Index, 0.75mm	1760 / -	°F	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm	1760 / -	°F	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	1760 / -	°F	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	1700 / -	°F	IEC 60695-2-13
Glow Wire Ignition Temperature, 1.5mm	1700 / -	°F	IEC 60695-2-13
Glow Wire Ignition Temperature, 3.0mm	1760 / -	°F	IEC 60695-2-13
FMVSS Class	DNI		ISO 3795 (FMVSS 302)

Electrical properties

	dry/cond.		
Relative permittivity, 100Hz	3.5 / -		IEC 62631-2-1
Relative permittivity, 1MHz	3.3 / -		IEC 62631-2-1
Dissipation factor, 100Hz	50 / -	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	135 / -	E-4	IEC 62631-2-1
Volume resistivity	>1E13 / -	Ohm.m	IEC 62631-3-1
Electric strength	889 / -	kV/in	IEC 60243-1
Comparative tracking index	525 / -		IEC 60112
Comparative tracking index, 23 °C	1 / -	PLC	UL 746A

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	0.2[1] / *	%	Sim. to ISO 62
Density	0.0585 / -	lb/in³	ISO 1183

[1]: 2mm thickness

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Emissions

	dry/cond.		
Emission of organic compounds	35	µgC/g	VDA 277
Odor test	4.5	class	VDA 270
Fogging, F-value (refraction)	95 / *	%	ISO 6452

Injection

Drying Recommended	yes	
Drying Temperature	212	°F
Drying Time, Dehumidified Dryer	6 - 8	h
Processing Moisture Content	≤0.1	%
Melt Temperature Optimum	617	°F
Min. melt temperature	608	°F
Max. melt temperature	626	°F
Mold Temperature Optimum	212	°F
Min. mold temperature	194	°F
Max. mold temperature	230	°F
Hold Pressure Time (h is the max. wall thickness of the part in mm)	h^2+2	s
Ejection temperature	507	°F

Automotive

OEM	STANDARD	ADDITIONAL INFORMATION
Renault-Nissan	UB25c, No Spec, Special Part Approval, See Your CE Account Manager.	
Stellantis	B62 0300 / 61/U4/217E/215M/C2B/C4/13	01378_20_04242

Characteristics

Processing	Injection Molding
Additives	Flame retardant
Special characteristics	Flame retardant, Lead-free soldering resistant

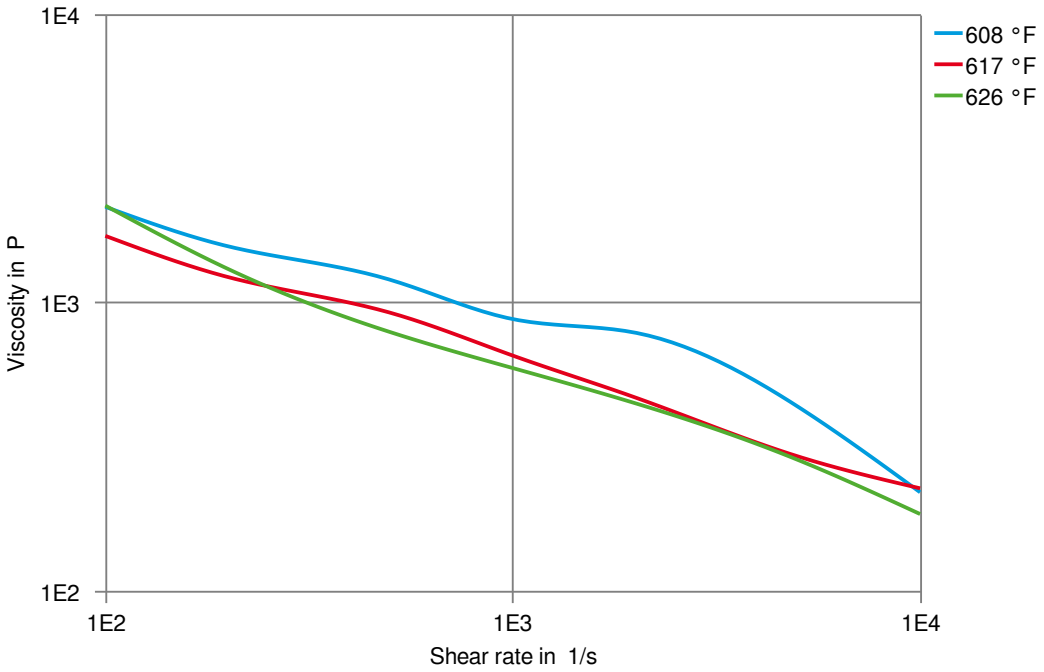
Additional information

Injection molding	During molding, use proper protective equipment and adequate ventilation. Avoid exposure to fumes and limit the holdup time and temperature of the resin in the machine. Purge degraded resin carefully with HDPE.

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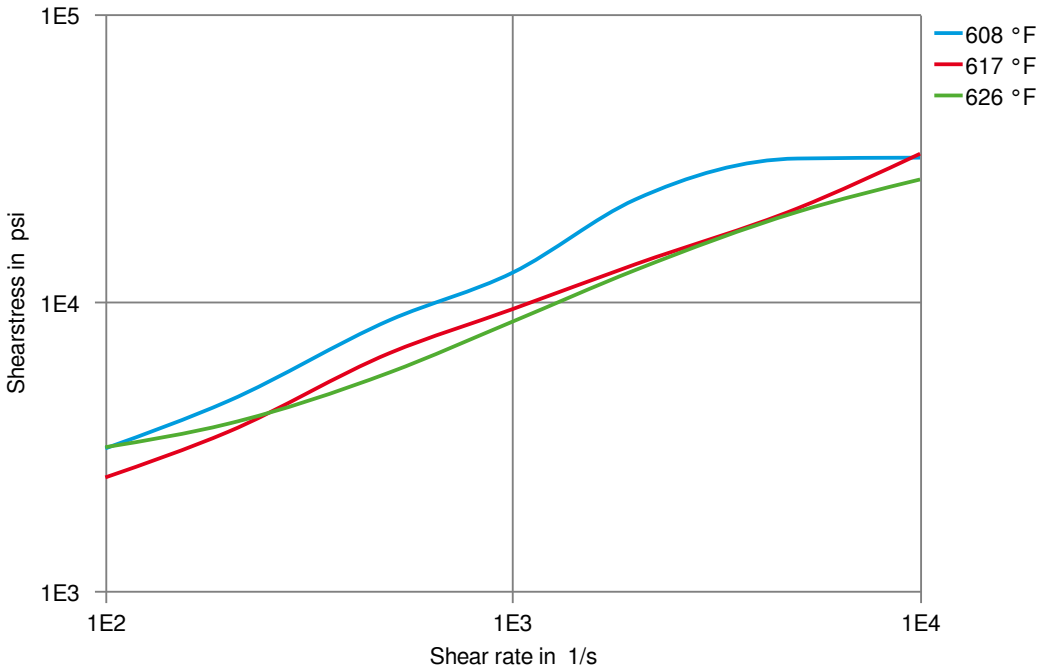
Viscosity-shear rate



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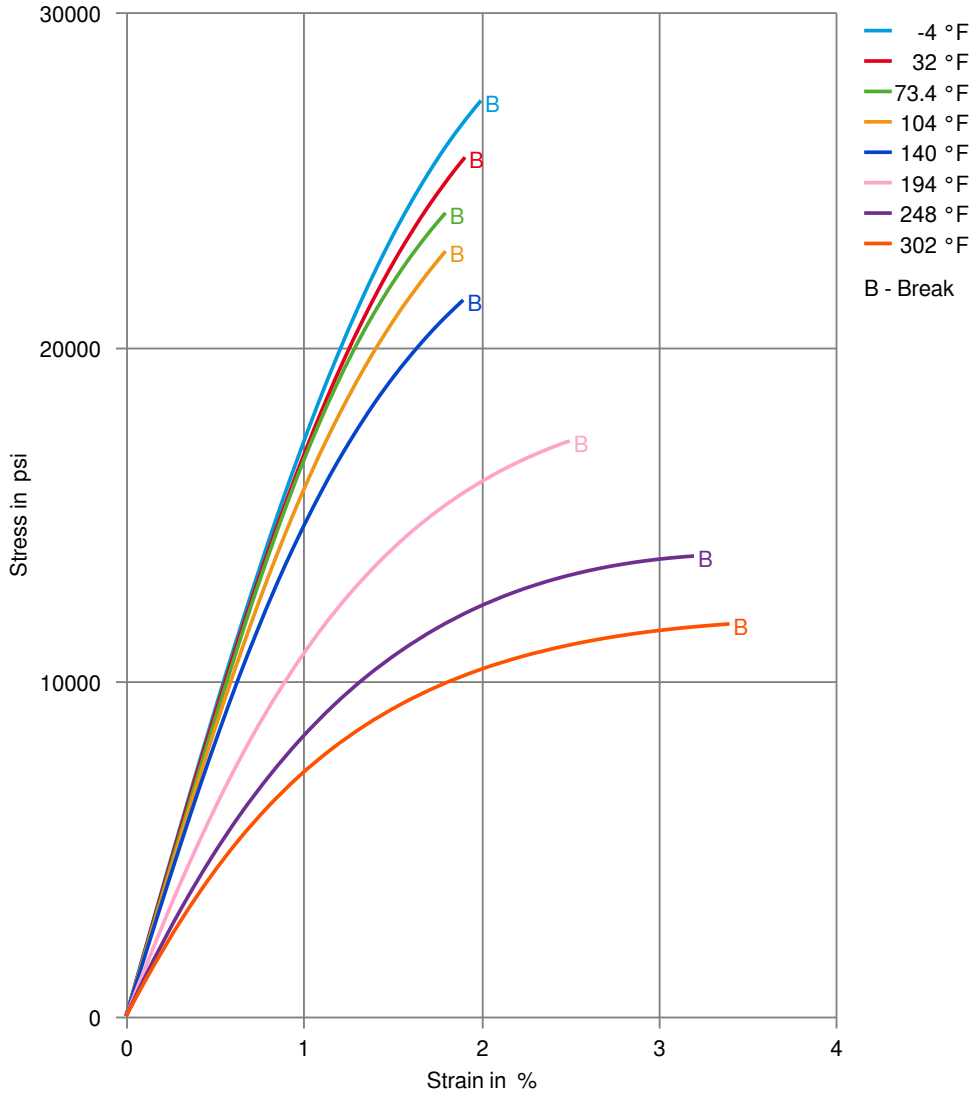
Shearstress-shear rate



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Stress-strain (dry)

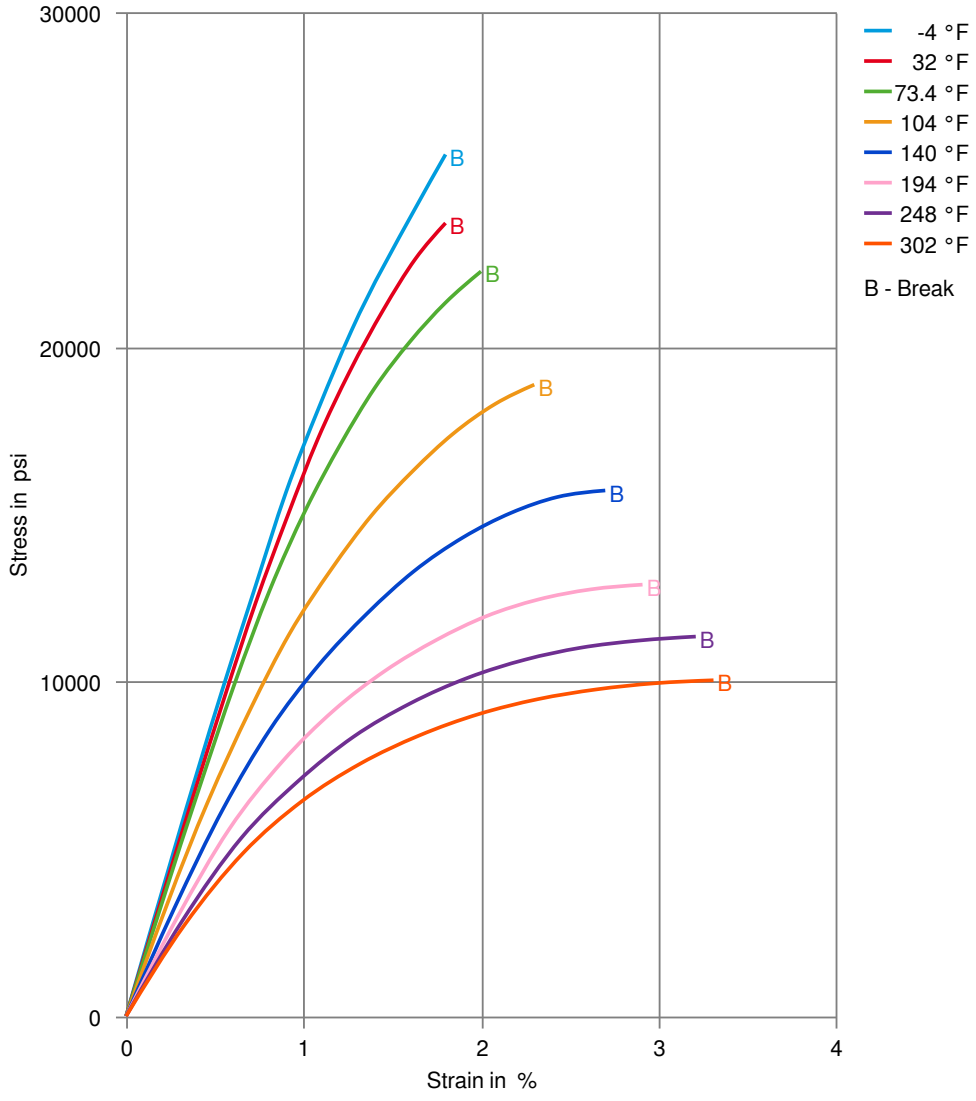


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Stress-strain (cond.)

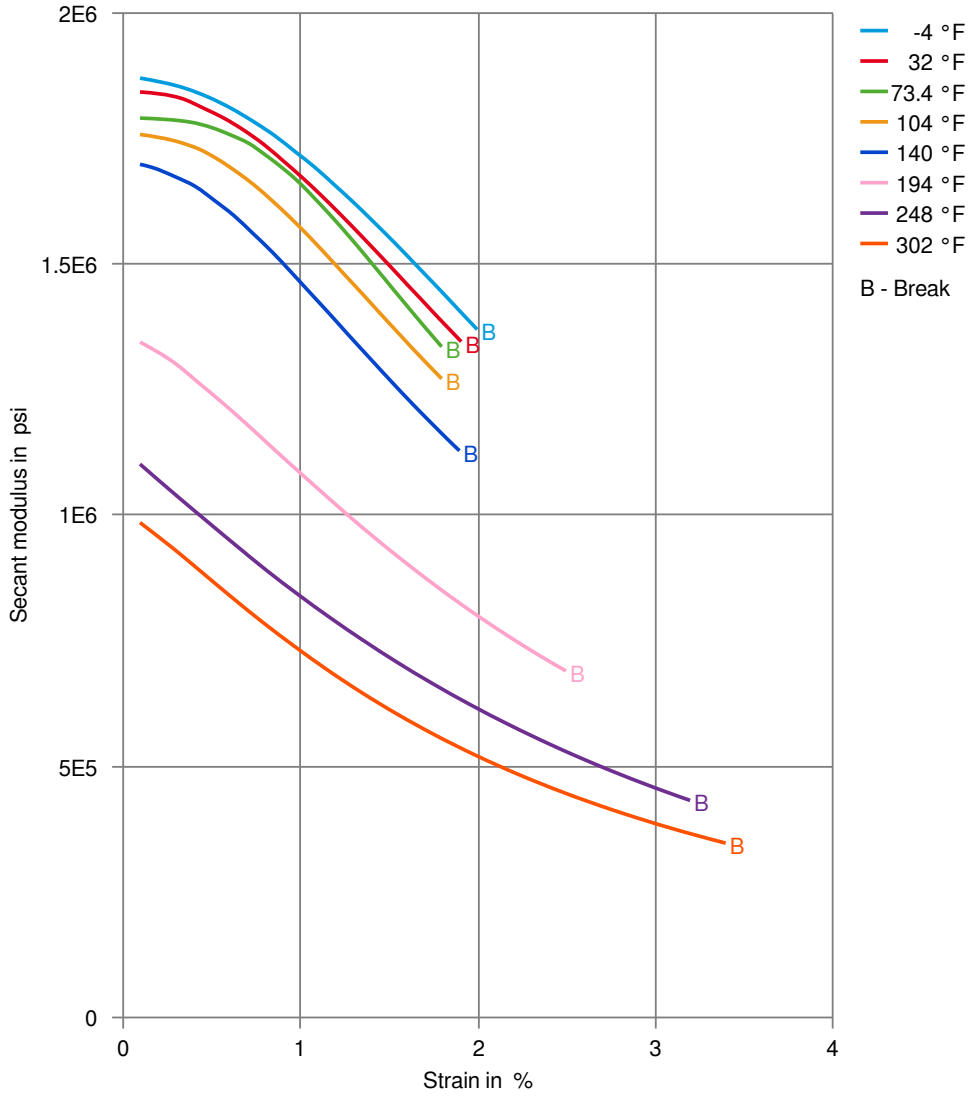


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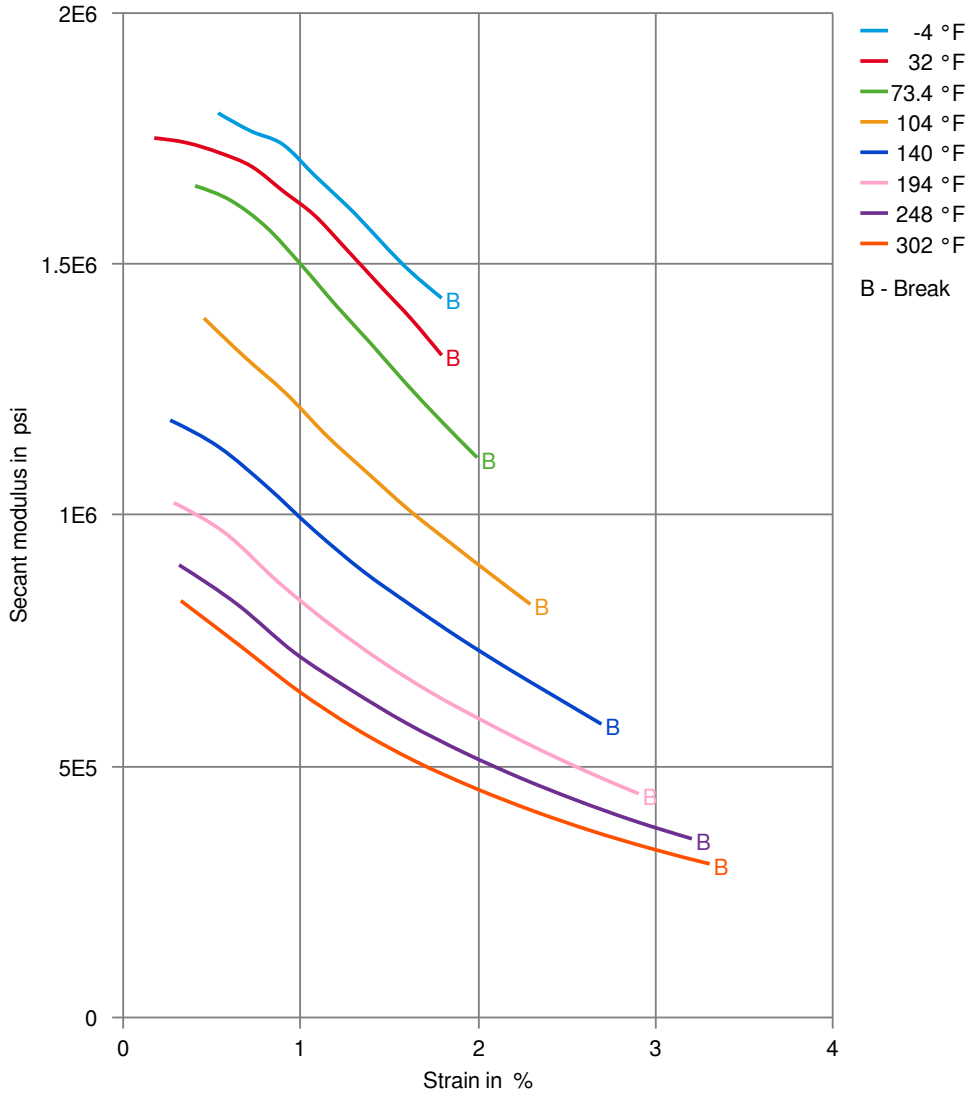
Secant modulus-strain (dry)



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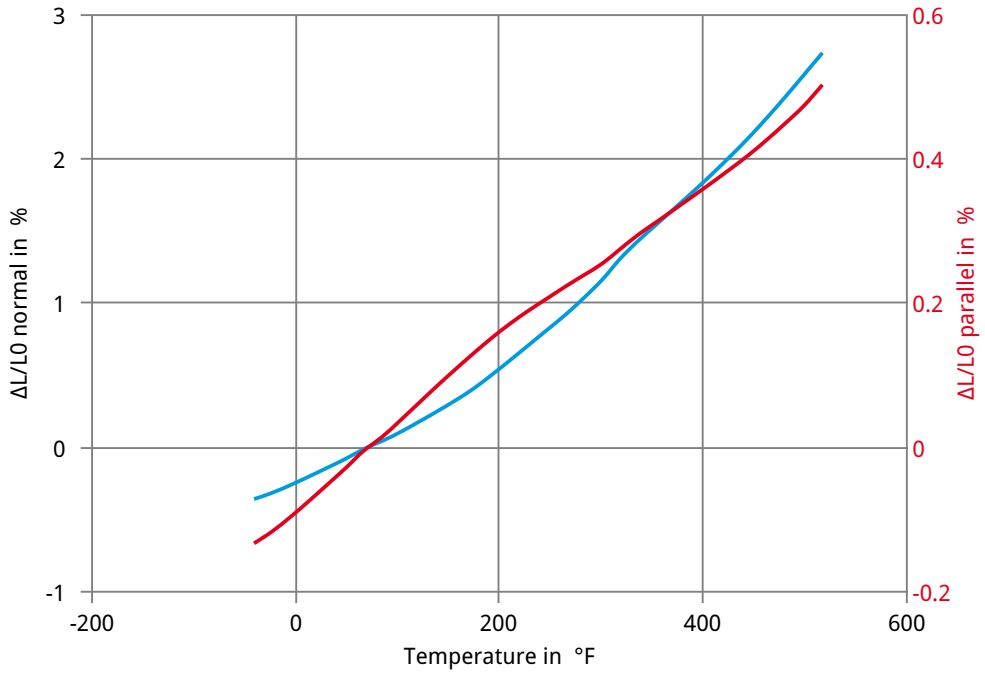
Secant modulus-strain (cond.)



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Thermal expansion



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NOTICE TO USERS: Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colorants or other additives may cause significant variations in data values. Properties of molded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing conditions and environmental exposure. Other than those products expressly identified as medical grade (including by MT® product designation or otherwise), Celanese's products are not intended for use in medical or dental implants. Regardless of any such product designation, any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use. To the best of our knowledge, the information contained in this publication is accurate; however, we do not assume any liability whatsoever for the accuracy and completeness of such information. The information contained in this publication should not be construed as a promise or guarantee of specific properties of our products. It is the sole responsibility of the users to investigate whether any existing patents are infringed by the use of the materials mentioned in this publication. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible adverse effects. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. We recommend that persons intending to rely on any recommendation or to use any equipment, processing technique or material mentioned in this publication should satisfy themselves that they can meet all applicable safety and health standards. We strongly recommend that users seek and adhere to the manufacturer's current instructions for handling each material they use, and entrust the handling of such material to adequately trained personnel only. Please call the telephone numbers listed for additional technical information. Call Customer Services for the appropriate Materials Safety Data Sheets (MSDS) before attempting to process our products.
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