Zytel® HTNFE8200 NC010

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® HTNFE8200 NC010 is an unreinforced, toughened, heat stabilized high performance polyamide resin for injection molding. It is also a PPA resin.

Product information

Resin Identification	PA6T/XT-I	ISO 1043
Part Marking Code	>PA6T/XT-I<	ISO 11469
Part Marking Code	>PPA-I<	SAE J1344
ISO designation	ISO 16396-PA6T/XT-I,,M1G1HNR,S10-020	
Infrared spectrum	available	

Rheological properties

	dry/cond.		
Molding shrinkage, parallel	0.8 / -	%	ISO 294-4, 2577
Molding shrinkage, normal	0.9 / -	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile modulus	319000 / 334000	psi	ISO 527-1/-2
Tensile stress at yield, 50mm/min	9900 / 9900	psi	ISO 527-1/-2
Tensile strain at yield, 50mm/min	5.5 / 4.4	%	ISO 527-1/-2
Nominal strain at break	14 / 10	%	ISO 527-1/-2
Flexural modulus	305000 / 319000	psi	ISO 178
Charpy impact strength, 23°C	N / N	ftlb/in²	ISO 179/1eU
Charpy impact strength, -30°C	N / N	ftlb/in²	ISO 179/1eU
Charpy notched impact strength, 23°C	35.7 / -	ftlb/in²	ISO 179/1eA
Izod notched impact strength, 23°C	35.7 / -	ftlb/in²	ISO 180/1A
Izod notched impact strength, -40°C	8.56 / -	ftlb/in²	ISO 180/1A

Tribological properties

	dry/cond.	
Coefficient of sliding friction, 1h against steel	- / 0.4	ASTM 1894

Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	572 / *	°F	ISO 11357-1/-3
Melting temperature, first heat	572 / *	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	259 / *	°F	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	280 / *	°F	ISO 75-1/-2
Coefficient of linear thermal expansion (CLTE), parallel	0.50 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), parallel, -40-23°C	0.5 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), parallel, 55-160°C	0.506 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	0.467 / *	E-4/°F	ISO 11359-1/-2

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Coefficient of linear thermal expansion (CLTE), normal, -40-23 °C	0.4 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal, 55-160 °C	0.478 / *	E-4/°F	ISO 11359-1/-2
Thermal conductivity, flow	0.27	W/(m K)	ISO 22007-2
Thermal conductivity of melt	0.18	W/(m K)	ISO 22007-2
Specific heat capacity of melt	2220	J/(kg K)	ISO 22007-4
RTI, electrical, 0.75mm	185	°F	UL 746B
RTI, electrical, 1.5mm	185	°F	UL 746B
RTI, electrical, 3.0mm	185	°F	UL 746B
RTI, impact, 0.75mm	185	°F	UL 746B
RTI, impact, 1.5mm	185	°F	UL 746B
RTI, impact, 3.0mm	185	°F	UL 746B
RTI, strength, 0.75mm	185	°F	UL 746B
RTI, strength, 1.5mm	185 / *	°F	UL 746B
RTI, strength, 3.0mm	185	°F	UL 746B

Flammability

	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	HB / *	class	IEC 60695-11-10
Thickness tested	0.0591 / *	in	IEC 60695-11-10
UL recognition	yes / *		UL 94
Burning Behav. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested	0.0295 / *	in	IEC 60695-11-10
UL recognition	yes / *		UL 94
FMVSS Class	B		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	<80	in/min	ISO 3795 (FMVSS 302)

Electrical properties

	dry/cond.		
Volume resistivity	1E13 / -	Ohm.m	IEC 62631-3-1
Surface resistivity	* / >1E15	Ohm	IEC 62631-3-2
Comparative tracking index	600 / -		IEC 60112

Physical/Other properties

	dry/cond.		
Humidity absorption, 2mm	1.9 / *	%	Sim. to ISO 62
Water absorption, 2mm	6.3 / *	%	Sim. to ISO 62
Density	0.0408 / -	lb/in³	ISO 1183
Density of melt	60.6	lb/ft³	

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	176	°F
Min. mold temperature	140	°F

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Max. mold temperature	212	°F
Hold Pressure Time (h is the max. wall thickness of the part in mm)	h^2+2	s
Ejection temperature	473	°F

Automotive

OEM	STANDARD	ADDITIONAL INFORMATION
General Motors	GMW16799P-PPA-T2	Natural
Stellantis - Chrysler	MS.50103 / CPN-5292	Natural

Characteristics

Processing	Injection Molding
Additives	Release agent
Special characteristics	Heat stabilized or stable to heat

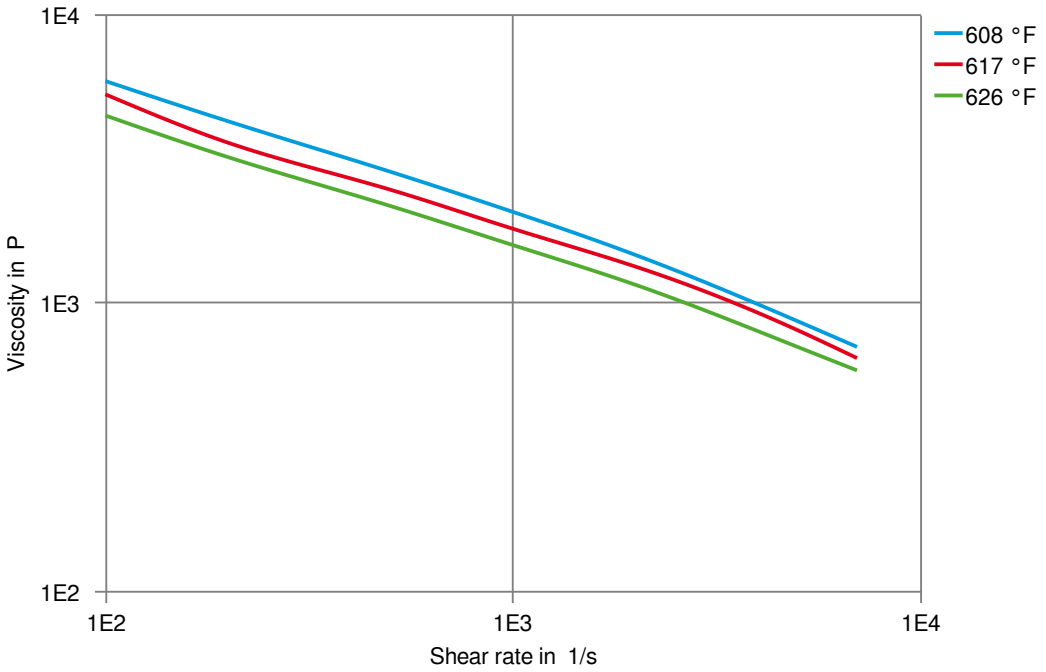
Additional information

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

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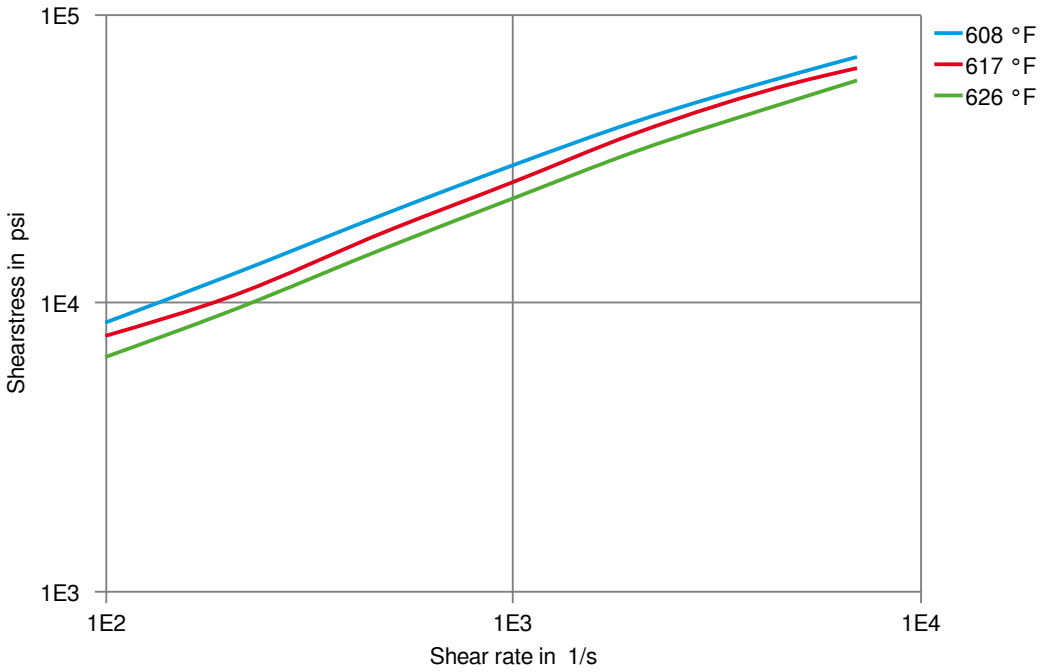
Viscosity-shear rate



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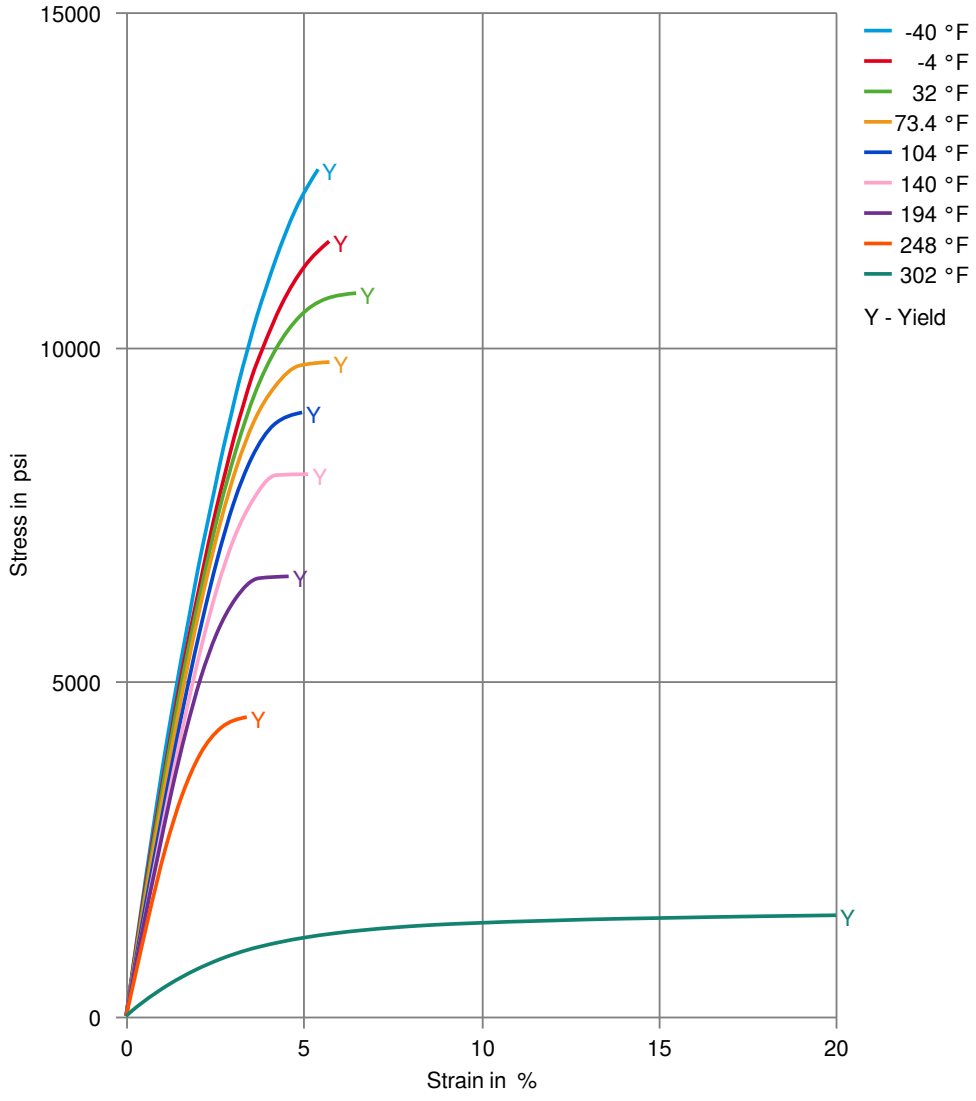
Shearstress-shear rate



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Stress-strain (dry)

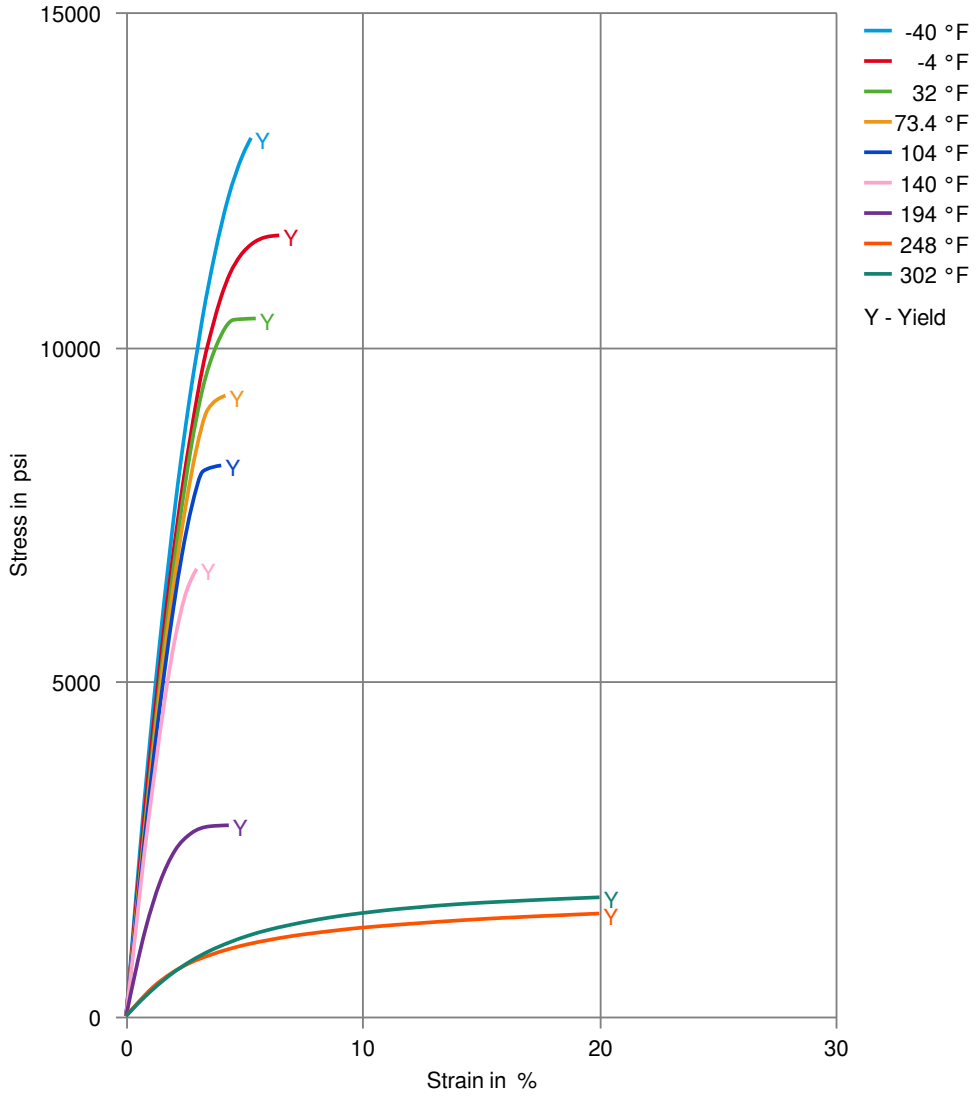


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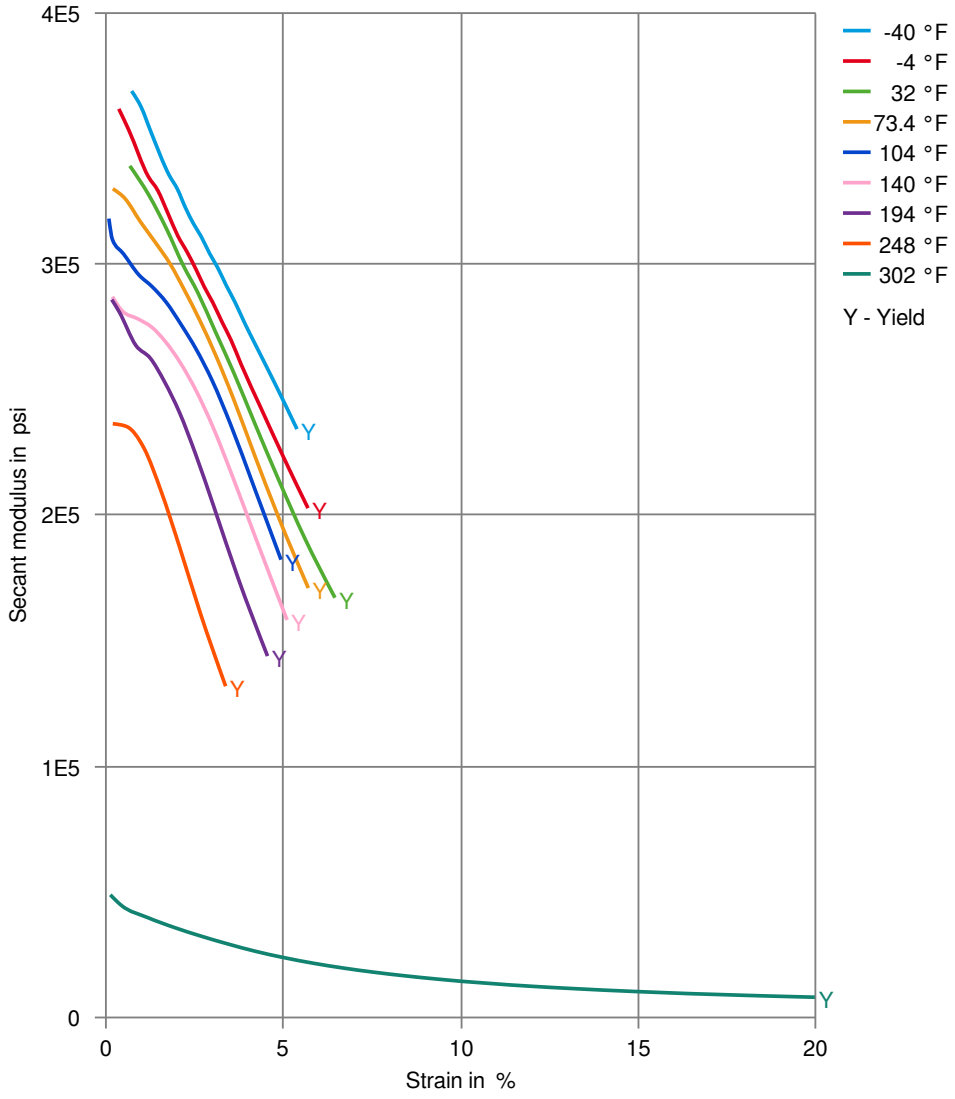
Stress-strain (cond.)



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Secant modulus-strain (dry)

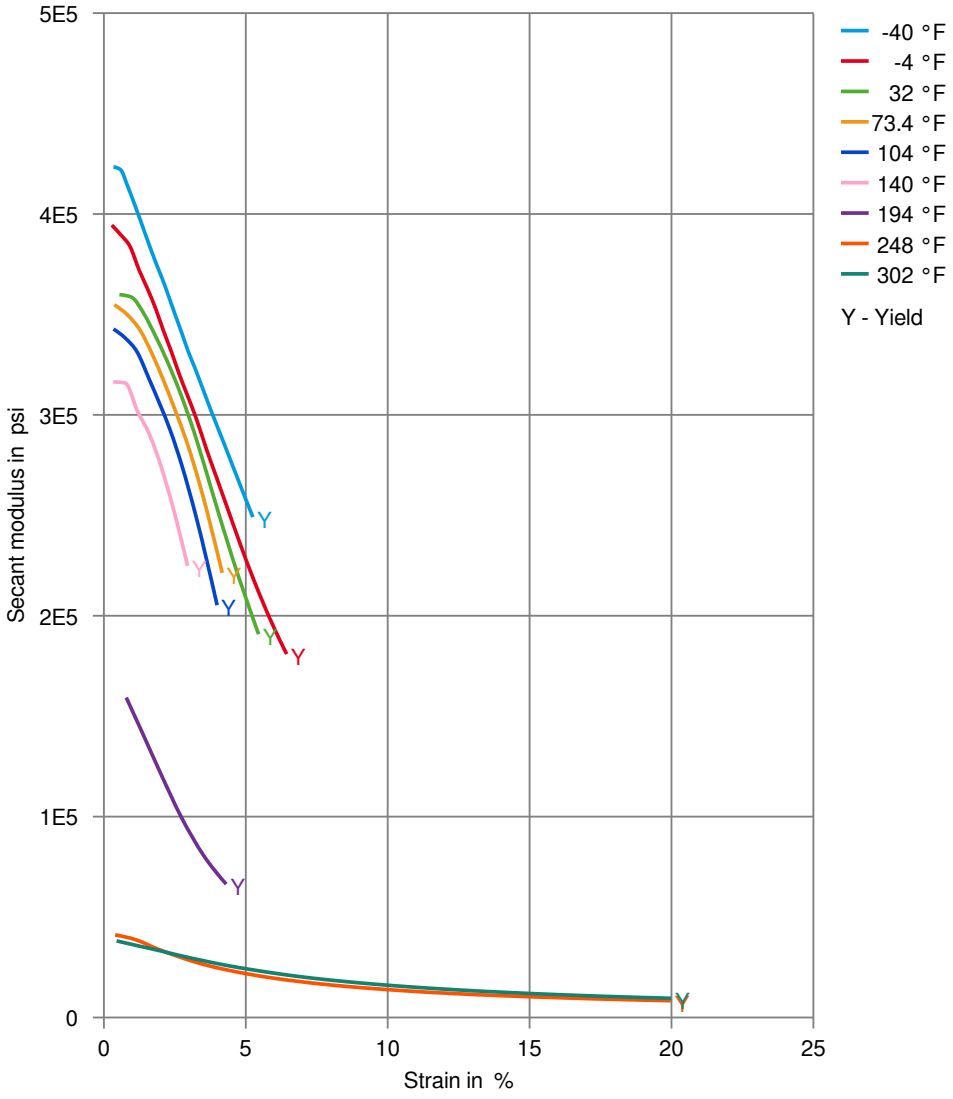


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Secant modulus-strain (cond.)

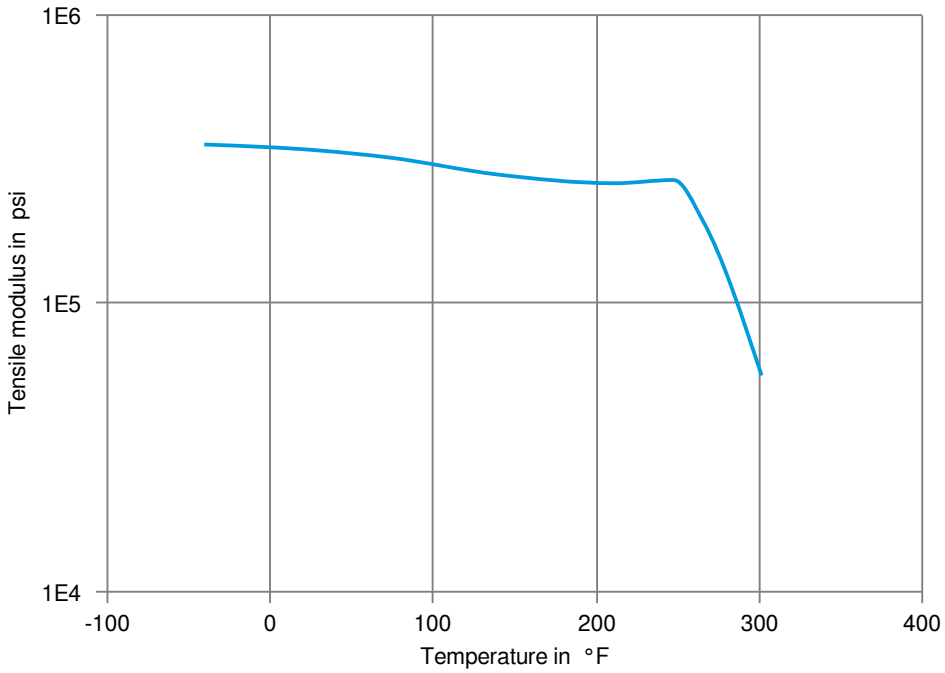


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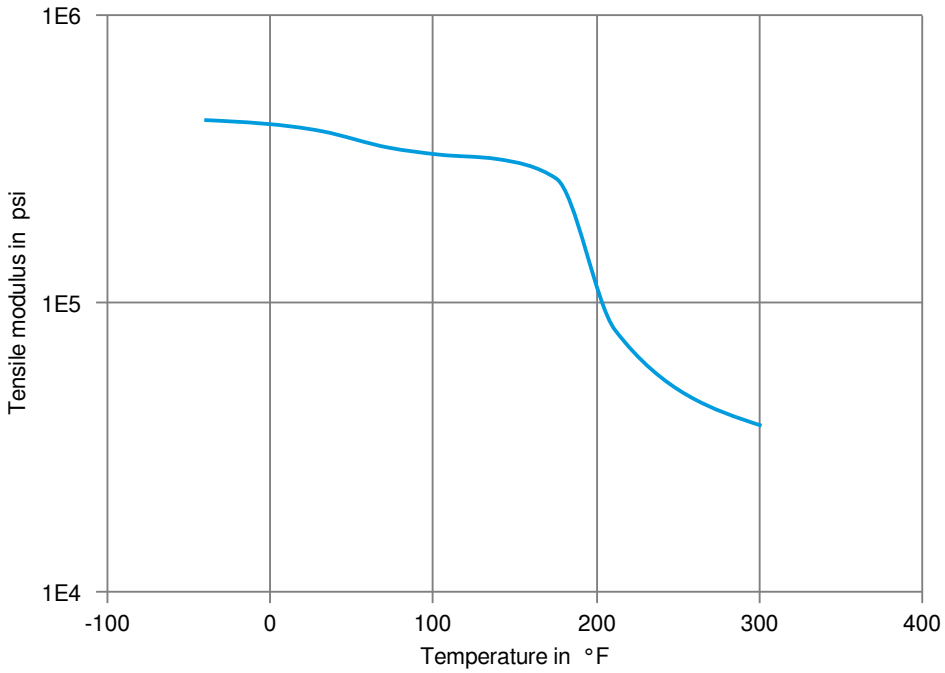
Tensile modulus-temperature (dry)



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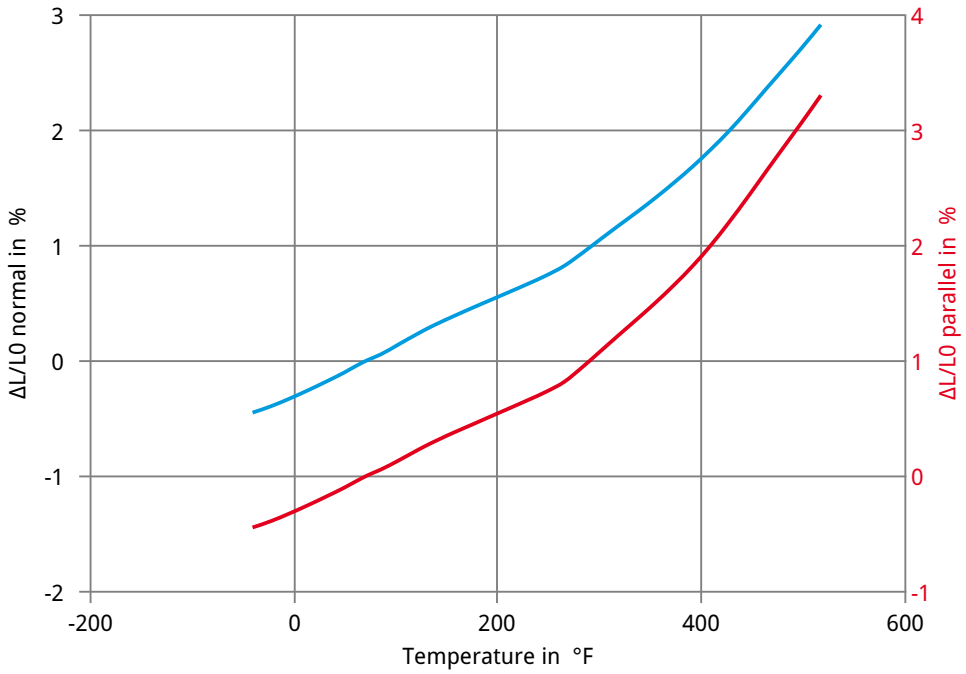
Tensile modulus-temperature (cond.)



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Thermal expansion



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Chemical Media Resistance

Mineral oils

- ✔ SAE 10W40 multigrade motor oil, 23 °C
- ✔ SAE 10W40 multigrade motor oil, 130 °C

Other

- ✔ Ethylene Glycol (50% by mass) in water, 108 °C

Symbols used:

✔ possibly resistant
Defined as: Supplier has sufficient indication that contact with chemical can be potentially accepted under the intended use conditions and expected service life. Criteria for assessment have to be indicated (e.g. surface aspect, volume change, property change).

✘ not recommended - see explanation
Defined as: Not recommended for general use. However, short-term exposure under certain restricted conditions could be acceptable (e.g. fast cleaning with thorough rinsing, spills, wiping, vapor exposure).

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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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