Zytel® 70G25HSLR NC010

NYLON RESIN

Common features of Zytel® nylon resin include mechanical and physical properties such as high mechanical strength, excellent balance of stiffness and toughness, good high temperature performance, good electrical and flammability properties, good abrasion and chemical resistance. In addition, Zytel® nylon resins are available in different modified and reinforced grades to create a wide range of products with tailored properties for specific processes and end-uses. Zytel® nylon resin, including most flame retardant grades, offer the ability to be coloured.

The good melt stability of Zytel® nylon resin normally enables the recycling of properly handled production waste. If recycling is not possible, we recommend, as the preferred option, incineration with energy recovery (-31kJ/g of base polymer) in appropriately equipped installations. For disposal, local regulations have to be observed.

Zytel® nylon resin typically is used in demanding applications in the automotive, furniture, domestic appliances, sporting goods and construction industry.

Zytel® 70G25HSLR is a 25% glass fibre reinforced, heat stabilised, hydrolysis resistant Polyamide 66 resin for injection molding.

Product information

Resin Identification	PA66-GF25	ISO 1043
Part Marking Code	>PA66-GF25<	ISO 11469
ISO designation	ISO 16396-PA66,GF25,M1GHNRW,S14-080	

Rheological properties

	dry/cond.		
Viscosity number	4150 / *	in³/lb	ISO 307, 1628
Molding shrinkage, parallel	0.3 / -	%	ISO 294-4, 2577
Molding shrinkage, normal	1.1 / -	%	ISO 294-4, 2577
Flow length	13.8 / *	in	
Flow length - width/thickness	0.0787 / *	in	

Typical mechanical properties

	dry/cond.		
Tensile modulus	1.23E6 / 870000	psi	ISO 527-1/-2
Tensile stress at break, 5mm/min	26100 / 17400	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	3 / 6	%	ISO 527-1/-2
Flexural modulus	1.16E6 / 798000	psi	ISO 178
Flexural strength	37700 / 24700	psi	ISO 178
Charpy impact strength, 23 °C	28.5 / 38.1	ftlb/in²	ISO 179/1eU
Charpy impact strength, -30 °C	28.5 / 21.4	ftlb/in²	ISO 179/1eU
Charpy notched impact strength, 23 °C	4.76 / 5.23	ftlb/in²	ISO 179/1eA
Charpy notched impact strength, -30 °C	3.33 / 3.33	ftlb/in²	ISO 179/1eA
Izod notched impact strength, 23 °C	5.23 / 5.71	ftlb/in²	ISO 180/1A
Izod notched impact strength, -40 °C	3.33 / 3.33	ftlb/in²	ISO 180/1A
Izod impact strength, 23 °C	23.8 / 38.1	ftlb/in²	ISO 180/1U
Izod impact strength, -30 °C	23.8 / 23.8	ftlb/in²	ISO 180/1U
Ball indentation hardness, H 961/30	37700 / -	psi	ISO 2039-1

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Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	504 / *	°F	ISO 11357-1/-3
Glass transition temperature, 10°C/min	176 / 77	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	486 / *	°F	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	502 / *	°F	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	495 / *	°F	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	0.18 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), parallel, -40-23°C	0.189 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), parallel, 55-160°C	0.1 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	0.622 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal, -40-23°C	0.417 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal, 55-160°C	0.722 / *	E-4/°F	ISO 11359-1/-2
Thermal conductivity of melt	0.21	W/(m K)	ISO 22007-2
Specific heat capacity of melt	2090	J/(kg K)	ISO 22007-4
RTI, electrical, 0.75mm	221	°F	UL 746B
RTI, electrical, 1.5mm	248	°F	UL 746B
RTI, electrical, 3.0mm	248	°F	UL 746B
RTI, impact, 1.5mm	203	°F	UL 746B
RTI, impact, 3.0mm	203	°F	UL 746B
RTI, strength, 1.5mm	221 / *	°F	UL 746B
RTI, strength, 3.0mm	230	°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	0.1181 / *	in	IEC 60695-11-10
UL recognition	yes / *		UL 94
Glow Wire Flammability Index, 1.0mm	1200 / -	°F	IEC 60695-2-12
Glow Wire Flammability Index, 2.0mm	1200 / -	°F	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	1380 / -	°F	IEC 60695-2-12
FMVSS Class	B		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	1.02	in/min	ISO 3795 (FMVSS 302)

Electrical properties

	dry/cond.		
Relative permittivity, 100Hz	3.6 / -		IEC 62631-2-1
Dissipation factor, 100Hz	70 / -	E-4	IEC 62631-2-1
Volume resistivity	1E13 / -	Ohm.m	IEC 62631-3-1
Surface resistivity	* / 1E13	Ohm	IEC 62631-3-2
Comparative tracking index	400 / -		IEC 60112
Electric Strength, Short Time, 1mm	610 / -	V/mil	IEC 60243-1

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Physical/Other properties

	dry/cond.		
Humidity absorption, 2mm	2 / *	%	Sim. to ISO 62
Water absorption, 2mm	6.4 / *	%	Sim. to ISO 62
Water absorption, Immersion 24h	1.4 / *	%	Sim. to ISO 62
Density	0.0477 / -	lb/in³	ISO 1183
Density of melt	71.8	lb/ft³	

Emissions

	dry/cond.		
Odor test	3.5	class	VDA 270
Fogging, G-value (condensate)	0.5 / *	mg	ISO 6452

Injection

Drying Recommended	yes	
Drying Temperature	176	°F
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	≤0.2	%
Melt Temperature Optimum	563	°F
Min. melt temperature	545	°F
Max. melt temperature	581	°F
Max. screw tangential speed	≤0.2	m/s
Mold Temperature Optimum	212	°F
Min. mold temperature	158	°F
Max. mold temperature	248	°F
Hold pressure range	7250 - 14500	psi
Hold pressure time	0.0762	s/mil
Hold Pressure Time (h is the max. wall thickness of the part in mm)	h²+2	s
Ejection temperature	410	°F

Automotive

OEM	STANDARD	ADDITIONAL INFORMATION
Ford	WSS-M4D1016-A1	
General Motors	GMW16270P-PA66-GF25	Natural
General Motors	GMW3038P-PA66-GF25H	Natural
General Motors	GMW3038P-PA66-GF25J	Natural
Hyundai	MS941-03 Type A-5	
Mercedes-Benz	DBL5410.00 PA66 GF25	
VW Group	VW 50133 PA66-5-A	

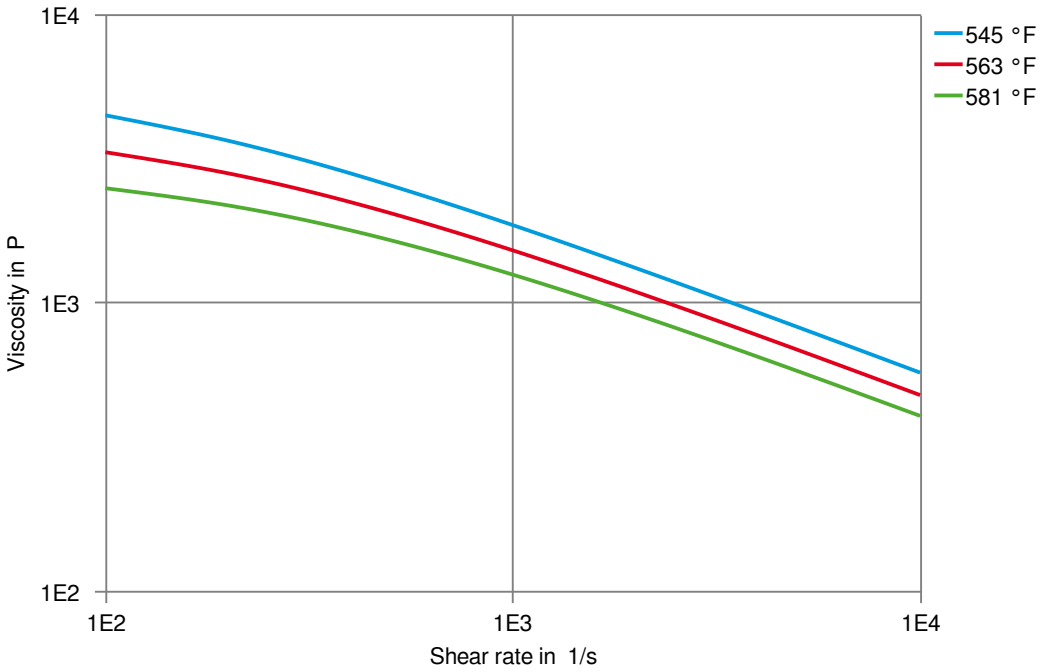
Characteristics

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

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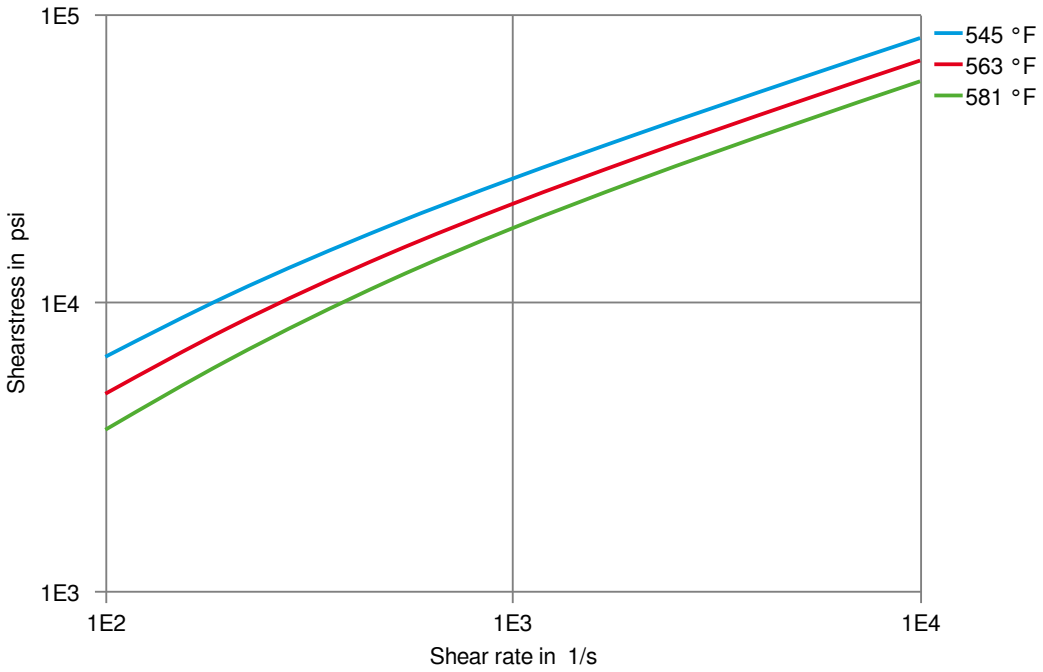
Viscosity-shear rate



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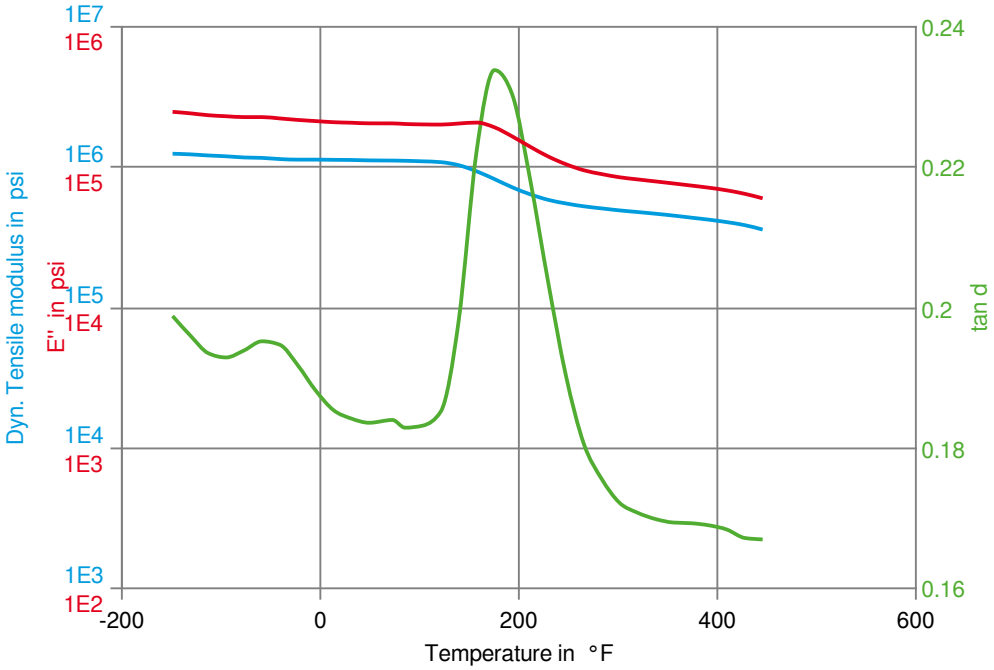
Shearstress-shear rate



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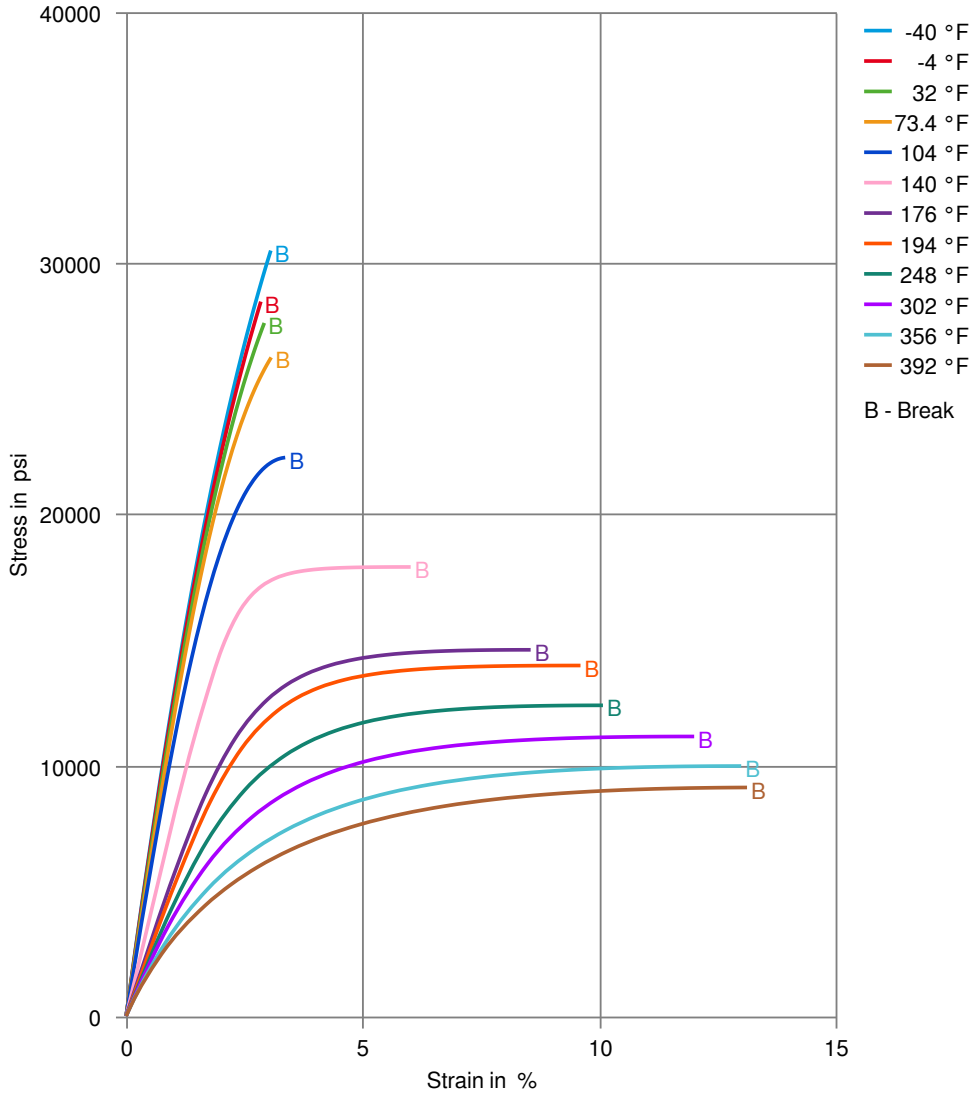
Dynamic Tensile modulus-temperature (dry)



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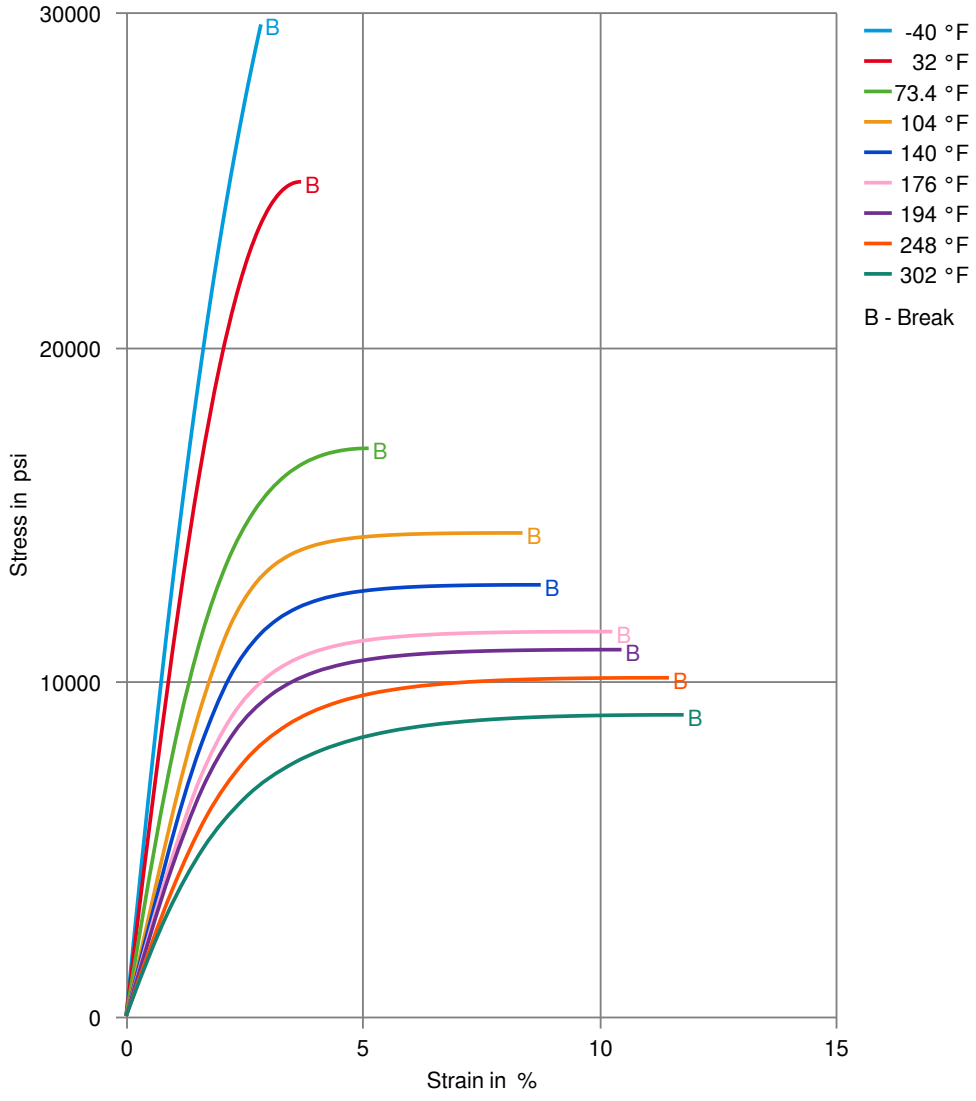
Stress-strain (dry)
(measured on Zytel® 70G25HSLR BK099)



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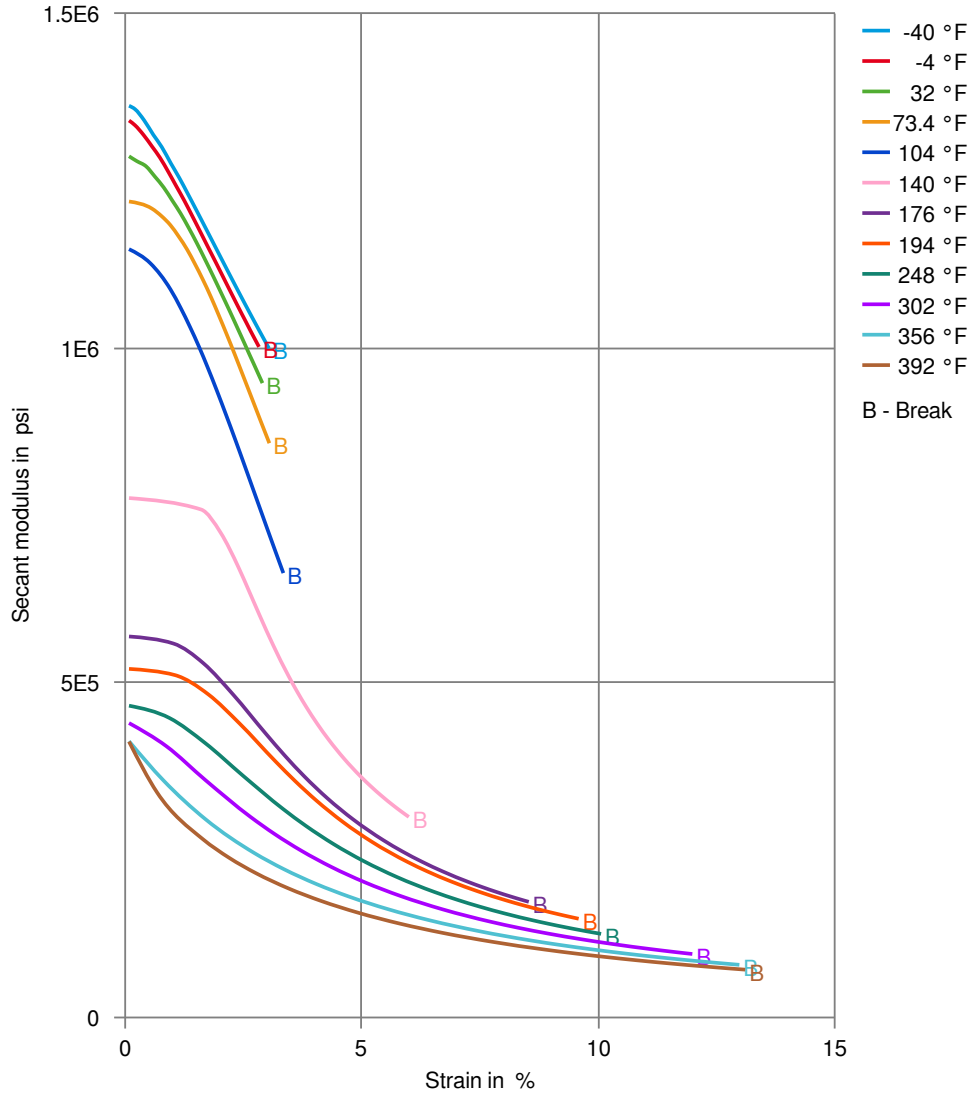
Stress-strain (cond.)
(measured on Zytel® 70G25HSLR BK099)



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Secant modulus-strain (dry)
(measured on Zytel® 70G25HSLR BK099)

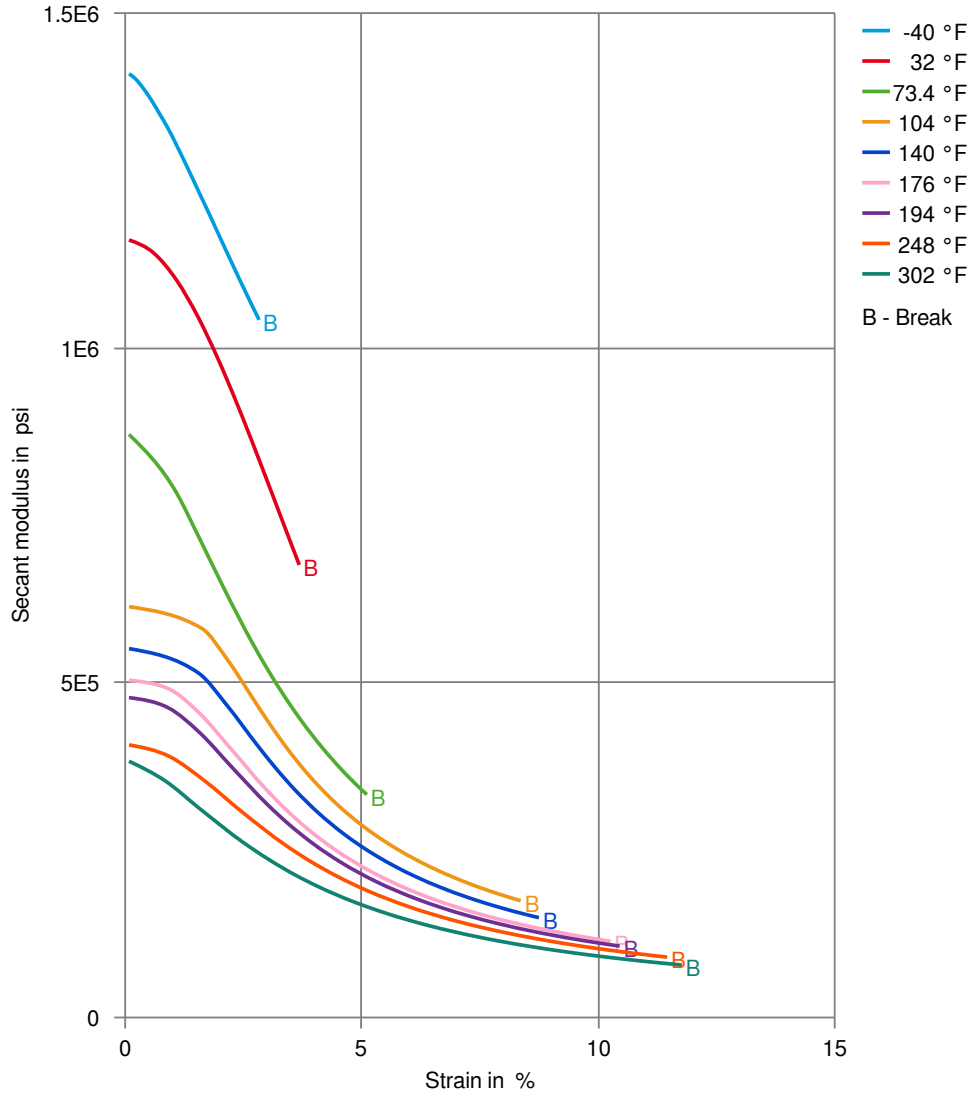


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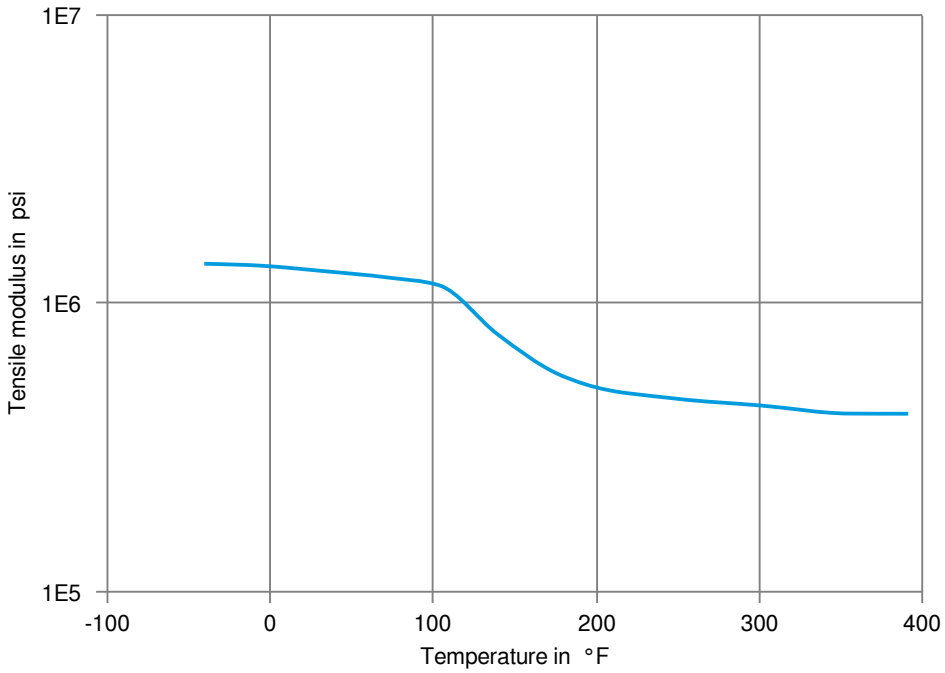
Secant modulus-strain (cond.)
(measured on Zytel® 70G25HSLR BK099)



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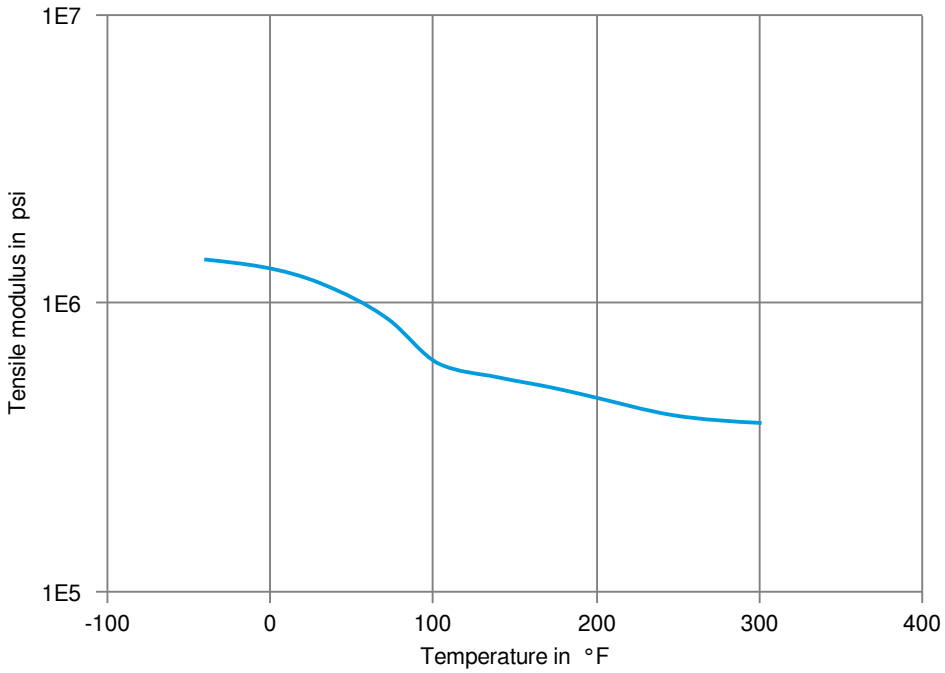
Tensile modulus-temperature (dry)
(measured on Zytel® 70G25HSLR BK099)



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Tensile modulus-temperature (cond.)
(measured on Zytel® 70G25HSLR BK099)



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Chemical Media Resistance

Acids

- ✔ Acetic Acid (5% by mass), 23°C
- ✔ Citric Acid solution (10% by mass), 23°C
- ✔ Lactic Acid (10% by mass), 23°C
- ✘ Hydrochloric Acid (36% by mass), 23°C
- ✘ Nitric Acid (40% by mass), 23°C
- ✘ Sulfuric Acid (38% by mass), 23°C
- ✘ Sulfuric Acid (5% by mass), 23°C
- ✘ Chromic Acid solution (40% by mass), 23°C

Bases

- ✘ Sodium Hydroxide solution (35% by mass), 23°C
- ✔ Sodium Hydroxide solution (1% by mass), 23°C
- ✔ Ammonium Hydroxide solution (10% by mass), 23°C

Alcohols

- ✔ Isopropyl alcohol, 23°C
- ✔ Methanol, 23°C
- ✔ Ethanol, 23°C

Hydrocarbons

- ✔ n-Hexane, 23°C
- ✔ Toluene, 23°C
- ✔ iso-Octane, 23°C

Ketones

- ✔ Acetone, 23°C

Ethers

- ✔ Diethyl ether, 23°C

Mineral oils

- ✔ SAE 10W40 multigrade motor oil, 23°C
- ✔ SAE 10W40 multigrade motor oil, 130°C
- ✔ SAE 80/90 hypoid-gear oil, 130°C
- ✔ Insulating Oil, 23°C

Standard Fuels

- ✔ ISO 1817 Liquid 1 - E5, 60°C
- ✔ ISO 1817 Liquid 2 - M15E4, 60°C
- ✔ ISO 1817 Liquid 3 - M3E7, 60°C
- ✔ ISO 1817 Liquid 4 - M15, 60°C
- ✔ Standard fuel without alcohol (pref. ISO 1817 Liquid C), 23°C
- ✔ Standard fuel with alcohol (pref. ISO 1817 Liquid 4), 23°C
- ✔ Diesel fuel (pref. ISO 1817 Liquid F), 23°C
- ✔ Diesel fuel (pref. ISO 1817 Liquid F), 90°C
- ✔ Diesel fuel (pref. ISO 1817 Liquid F), >90°C

Salt solutions

- ✔ Sodium Chloride solution (10% by mass), 23°C
- ✘ Sodium Hypochlorite solution (10% by mass), 23°C

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- ✔ Sodium Carbonate solution (20% by mass), 23°C
- ✔ Sodium Carbonate solution (2% by mass), 23°C
- ✘ Zinc Chloride solution (50% by mass), 23°C

Other

- ✔ Ethyl Acetate, 23°C
- ✘ Hydrogen peroxide, 23°C
- ✔ DOT No. 4 Brake fluid, 130°C
- ✔ DOT No. 4 Brake fluid, 120°C
- ✔ Ethylene Glycol (50% by mass) in water, 108°C
- ✔ 1% nonylphenoxy-polyethyleneoxy ethanol in water, 23°C
- ✔ 50% Oleic acid + 50% Olive Oil, 23°C
- ✔ Water, 23°C
- ✔ Water, 90°C
- ✘ Phenol solution (5% by mass), 23°C
- ✔ Coolant Glysantin G48, 1:1 in water, 125°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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