Zytel® XT70G50HSL BK044A

ZYTEL® PLUS & XT NYLON RESIN

Zytel® XT70G50HSL BK044A is a 50% glass fiber reinforced, heat stabilized polyamide 66 resin for injection molding.

Product information

Resin Identification	PA66-GF50	ISO 1043
Part Marking Code	>PA66-GF50<	ISO 11469
ISO designation	ISO 16396-PA66,GF50,M1CGHR,S14-160	
Infrared spectrum	available	
TGA curve	available	ISO 11358-1

Rheological properties

	dry/cond.		
Melt mass-flow rate	9 / *	g/10min	ISO 1133
Melt mass-flow rate, Temperature	527 / *	°F	
Melt mass-flow rate, Load	11 / *	lb	
Viscosity number	4010[1] / *	in³/lb	ISO 307, 1628
Molding shrinkage, parallel	0.2 / -	%	ISO 294-4, 2577
Molding shrinkage, normal	0.8 / -	%	ISO 294-4, 2577
Molding shrinkage, parallel, annealed	0.3 / *	%	ISO 294-4
Molding shrinkage, normal, annealed	1 / *	%	ISO 294-4

[1]: sulfuric acid 96% (132 cm³/g in formic acid 90%)

Typical mechanical properties

	dry/cond.		
Tensile modulus	2.47E6 / 1.67E6	psi	ISO 527-1/-2
Tensile stress at break, 5mm/min	34800 / 24700	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	2.6 / 5	%	ISO 527-1/-2
Flexural modulus	2.18E6 / -	psi	ISO 178
Flexural strength	49300 / -	psi	ISO 178
Charpy impact strength, 23°C	42.8 / 49.9	ftlb/in²	ISO 179/1eU
Charpy notched impact strength, 23°C	7.14 / 9.04	ftlb/in²	ISO 179/1eA
Charpy notched impact strength, -30°C	6.18 / -	ftlb/in²	ISO 179/1eA

Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	498 / *	°F	ISO 11357-1/-3
Glass transition temperature, 10°C/min	158 / 68	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	473 / *	°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), normal	0.361 / *	E-4/°F	ISO 11359-1/-2

Flammability

FMVSS Class	B		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	0.866	in/min	ISO 3795 (FMVSS 302)

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Physical/Other properties

	dry/cond.		
Humidity absorption, 2mm	1.2 / *	%	Sim. to ISO 62
Density	0.0574 / -	lb/in³	ISO 1183

Injection

Drying Recommended	yes	
Drying Temperature	176	°F
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	≤0.2	%
Melt Temperature Optimum	545	°F
Min. melt temperature	527	°F
Max. melt temperature	563	°F
Mold Temperature Optimum	212	°F
Min. mold temperature	158	°F
Max. mold temperature	248	°F
Hold Pressure Time (h is the max. wall thickness of the part in mm)	h^2+2	s
Ejection temperature	401	°F

Automotive

OEM	STANDARD	ADDITIONAL INFORMATION
BMW	GS93016-PA66-GF50	(Highly Heat Aging Resistant)
Valeo	PDTNVC15006 RevE	PA66-GF50 Class 5B

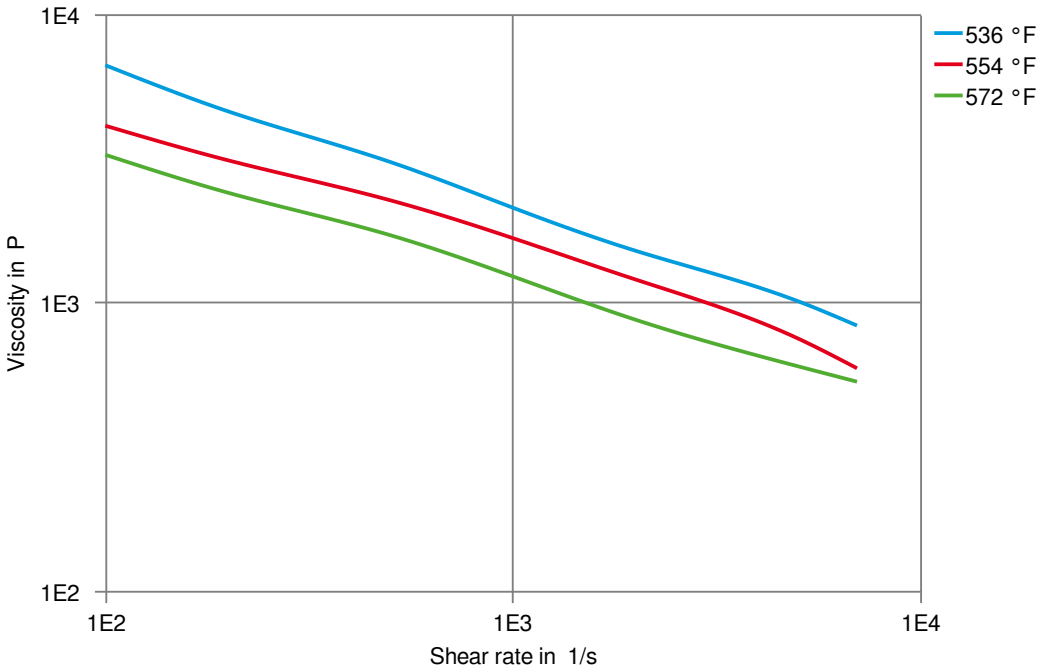
Characteristics

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

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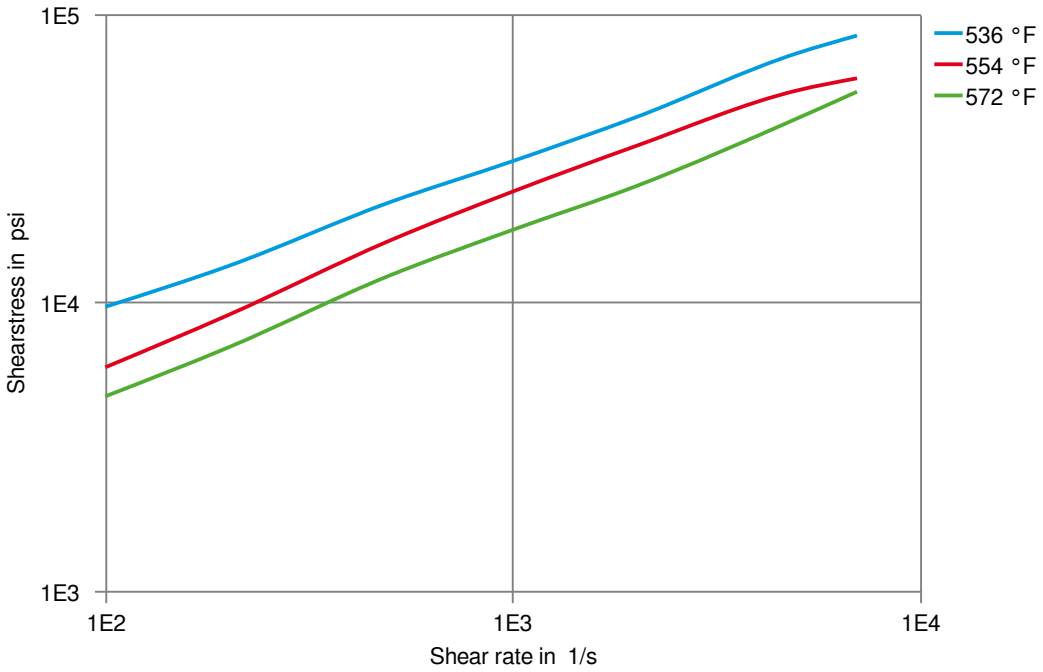
Viscosity-shear rate



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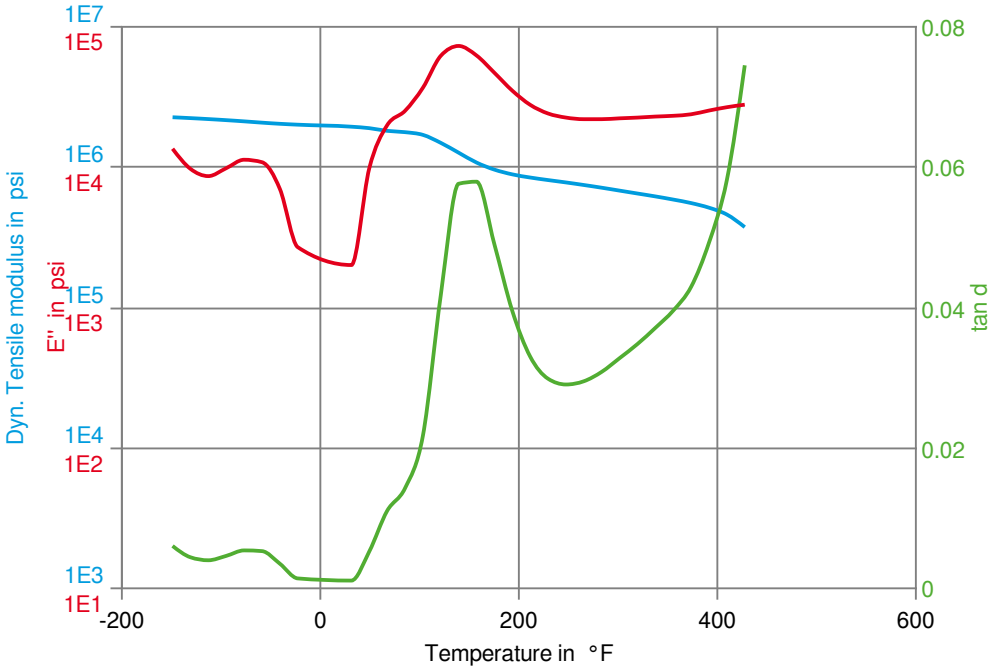
Shearstress-shear rate



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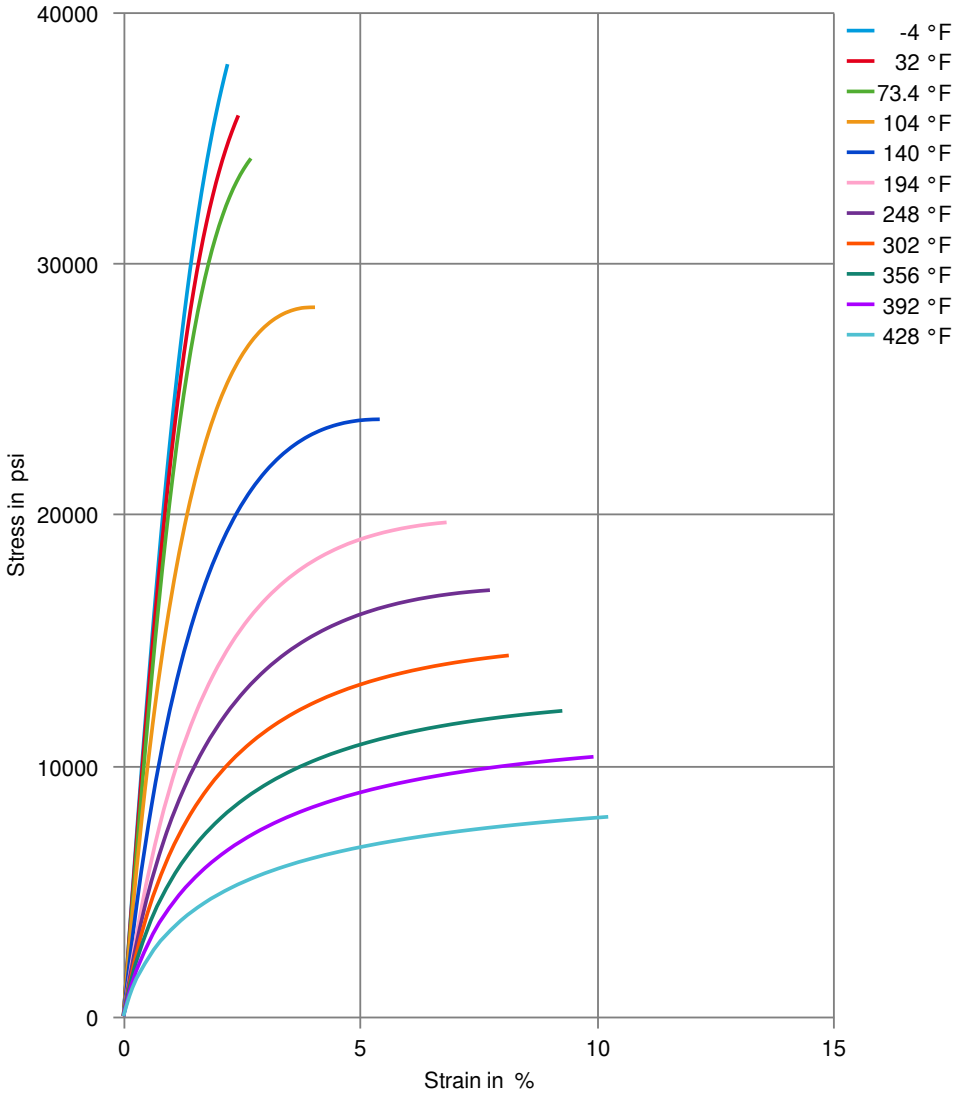
Dynamic Tensile modulus-temperature (dry)



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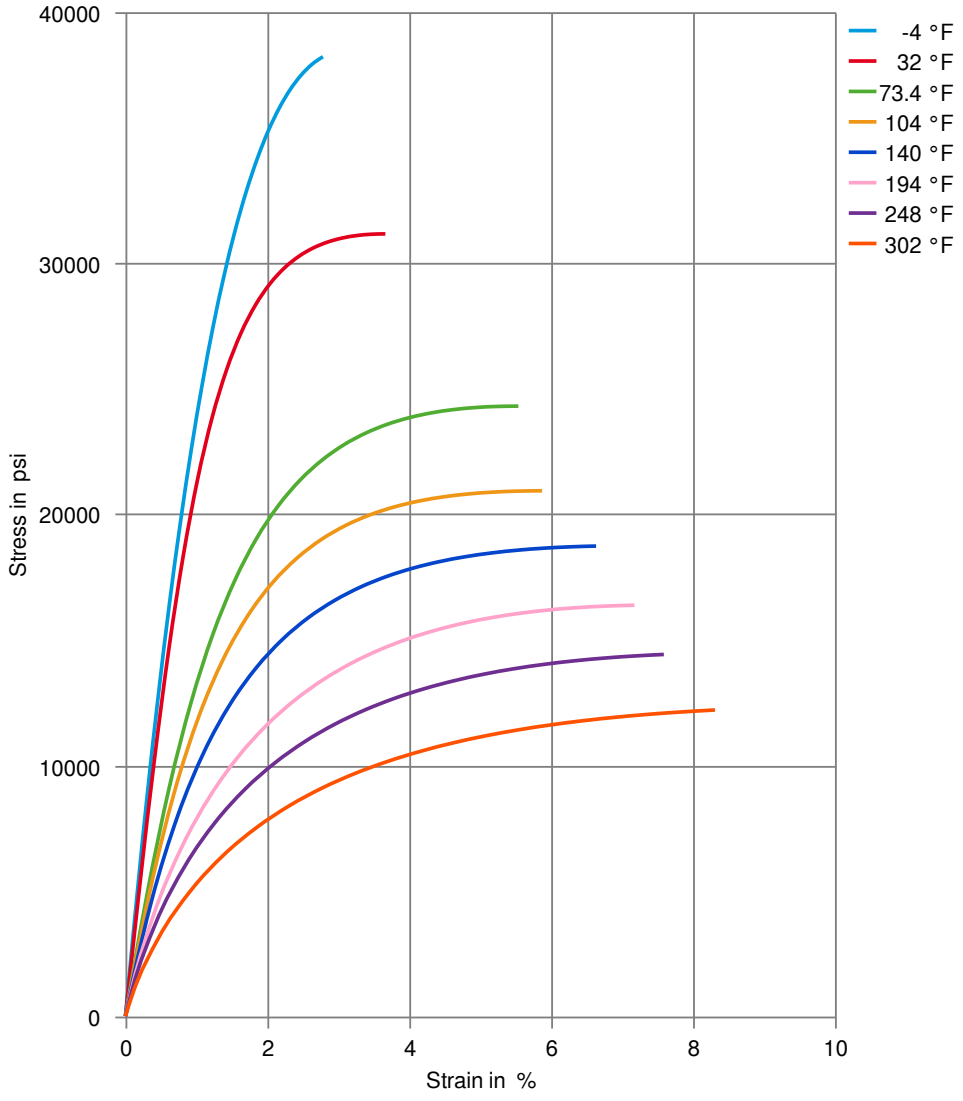
Stress-strain (dry)



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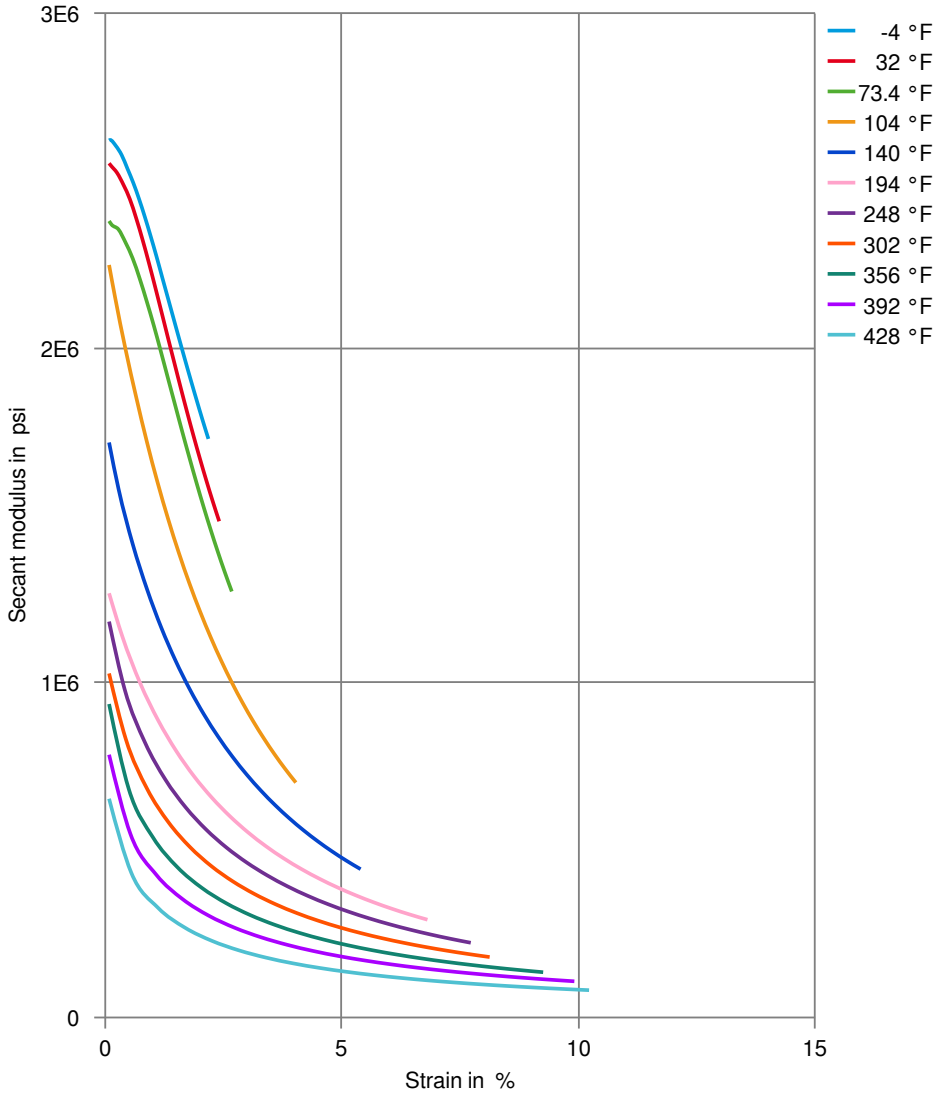
Stress-strain (cond.)



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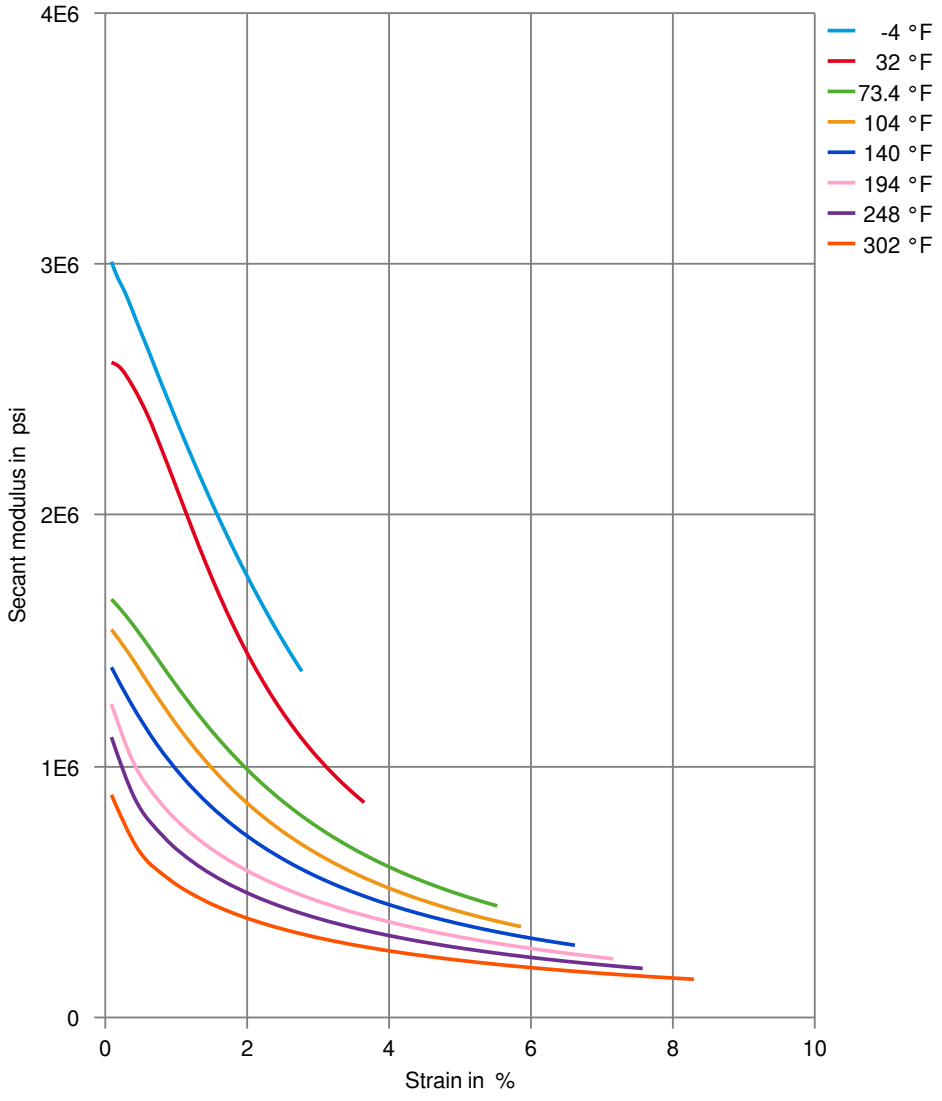
Secant modulus-strain (dry)



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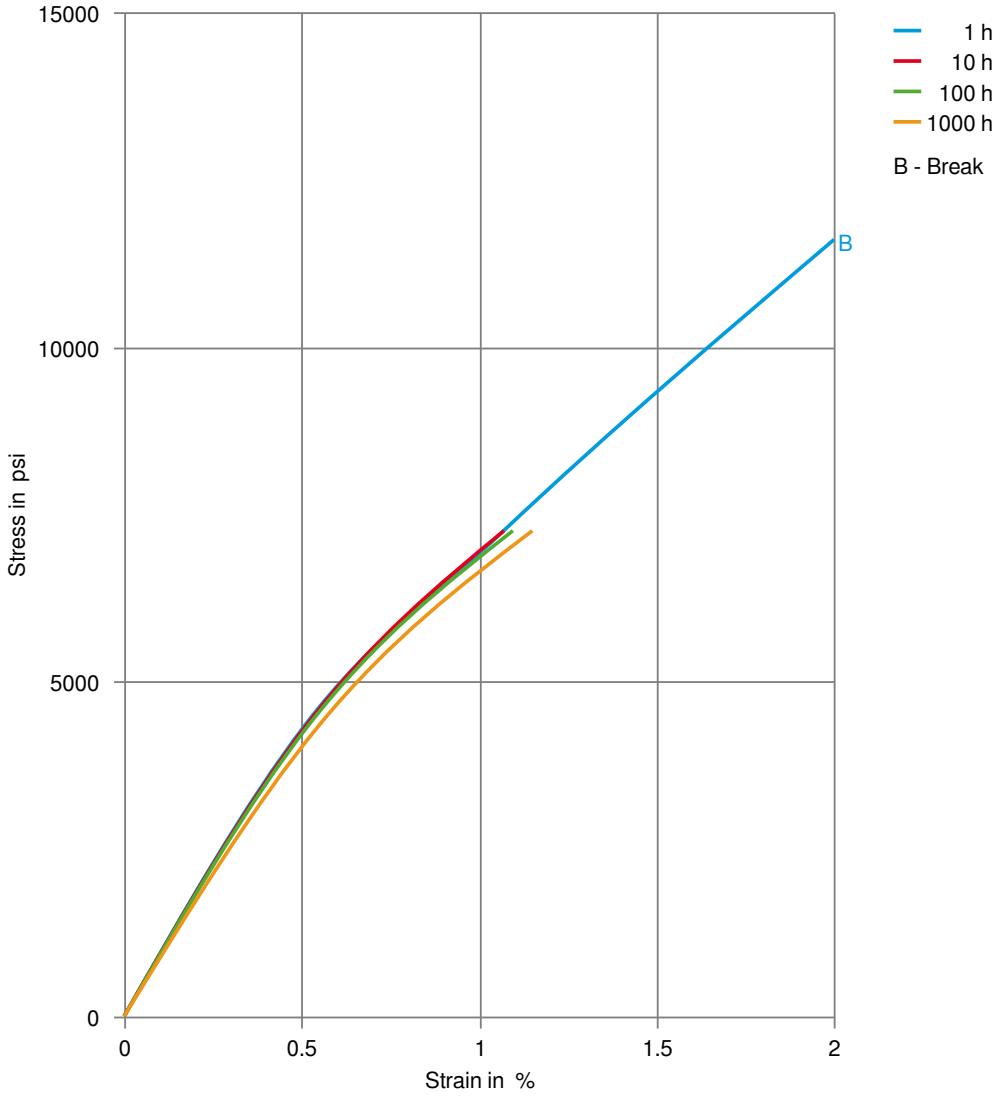
Secant modulus-strain (cond.)



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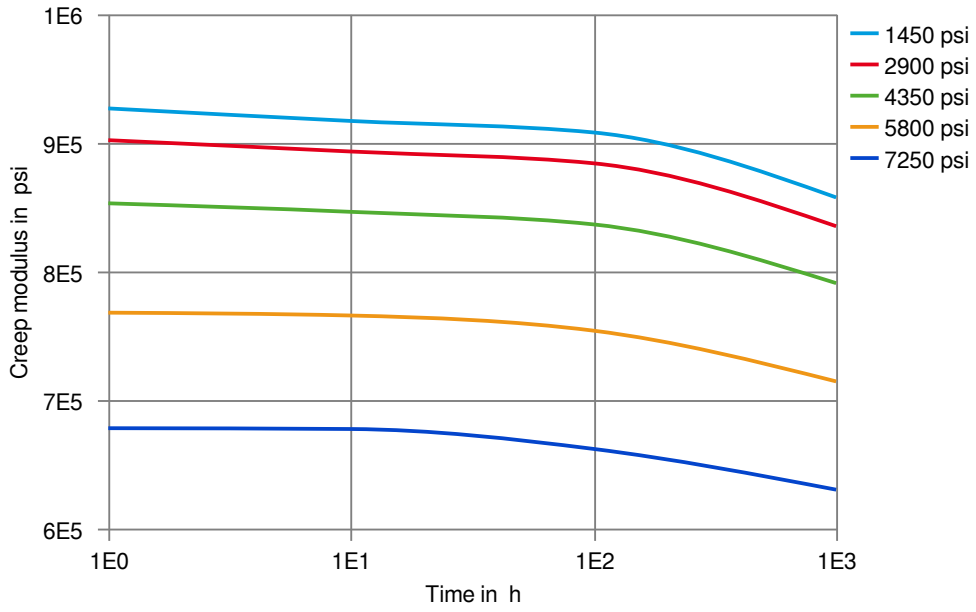
Stress-strain (isochronous) 230 °F (dry)



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Creep modulus-time 230 °F (dry)

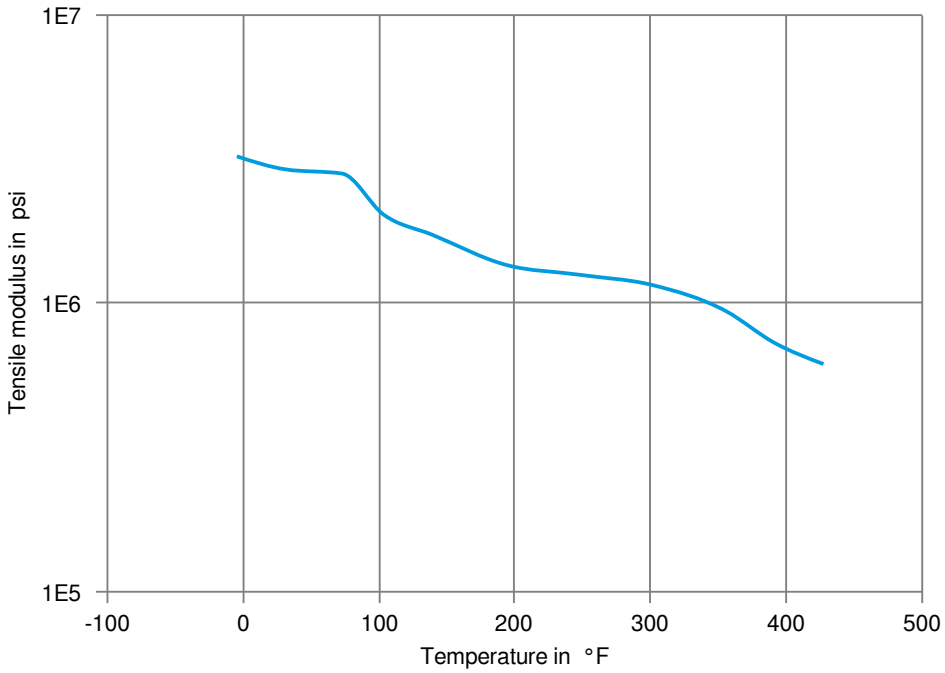


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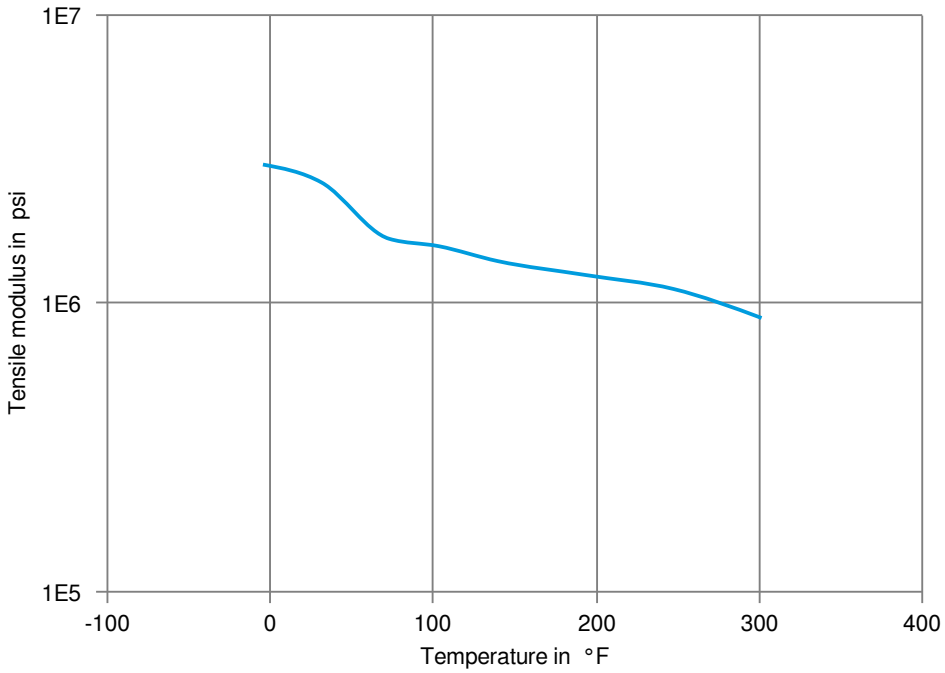
Tensile modulus-temperature (dry)



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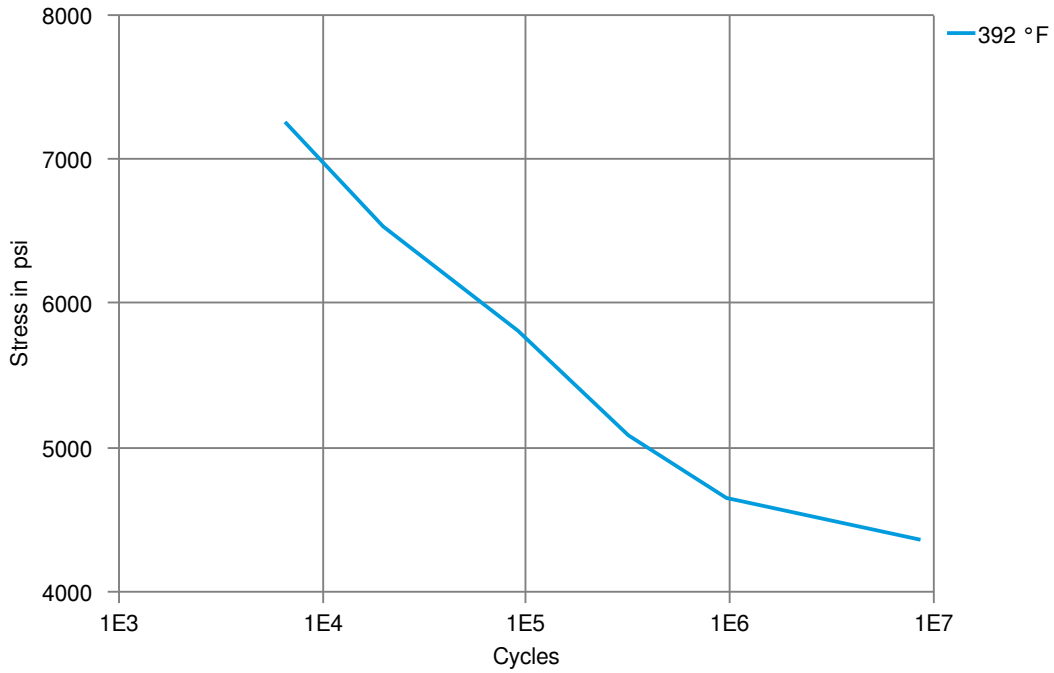
Tensile modulus-temperature (cond.)



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Tensile Fatigue, 10Hz, R=0.1 @ 0.08in (dry)



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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
- ✔ Motor oil OS206 304 Ref.Eng.Oil, ISP, 135°C
- ✔ Automatic hypoid-gear oil Shell Donax TX, 135°C
- ✔ Hydraulic oil Pentosin CHF 202, 125°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
- ✔ Diesel EN 590, 100°C

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Salt solutions

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

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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