

Zytel® PLS95G35DH1EF BK314LM

ZYTEL® PLUS & XT 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® PLS95G35DH1EF BK314LM is a high flow, 35% glass fiber reinforced, SHIELD protected polyamide resin for injection moulding. It has been developed for electrical and electronics applications. It provides excellent surface appearance and exceptional resistance to hot air. It is well suited for laser marking

Product information

Resin Identification	PA66/6T-GF35	ISO 1043
Part Marking Code	>PA66/6T-GF35<	ISO 11469
ISO designation	ISO 16396-PA66/6T,GF35,M1GHNR,S12-110	

Rheological properties

	dry/cond.		
Viscosity number	115 ^[1] */ ^[PV]	cm ³ /g	ISO 307, 1628
Moulding shrinkage, parallel	0.2/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.9/-	%	ISO 294-4, 2577
Melt viscosity, @ 1000 sec ⁻¹ , 280°C	140 ^[2] /*	Pa.s	ISO 11443

[PV]: Preliminary Value

[1]: sulphuric acid 96%

[2]: Performed at 280°C with a Shear Rate of 1000/sec and a Dwell Time of 300 secs using an Orifice with an L/D ratio of 20:1 and an Entrance Angle of 120°. Results are corrected to 0.13% Moisture.

Typical mechanical properties

	dry/cond.		
Tensile modulus	11000/8000	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	200/140	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	3/6	%	ISO 527-1/-2
Charpy impact strength, 23°C	70/90 ^[DS]	kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	70/70 ^[DS]	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	12/14 ^[DS]	kJ/m ²	ISO 179/1eA
Poisson's ratio	0.34/0.34		

[DS]: Derived from similar grade

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Thermal properties

	dry/cond.			
Melting temperature, 10°C/min	268/*	°C		ISO 11357-1/-3
Glass transition temperature, 10°C/min	80/40	°C		ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	245/*	°C		ISO 75-1/-2
Coeff. of linear therm. expansion, parallel, -40-23°C	18/*	E-6/K		ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), parallel	18/*	E-6/K		ISO 11359-1/-2
CLTE, Parallel, 23-55°C(73-130°F)	18/-	E-6/K		ASTM E 831
Coeff. of linear therm. expansion, parallel, 55-160°C	13/*	E-6/K		ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23°C	70/*	E-6/K		ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	88/*	E-6/K		ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, 55-160°C	130/*	E-6/K		ISO 11359-1/-2
Coeff. of linear therm. expansion, Normal,23-55°C (73-130°F)	88/-	E-6/K		ASTM E 831
Thermal conductivity of melt	0.22	W/(m K)		ISO 22007-2
Specific heat capacity of melt	2300 ^[DS]	J/(kg K)		ISO 22007-4
TGA curve	available			ISO 11359-1/-2

[DS]: Derived from similar grade

Flammability

	dry/cond.			
Burning Behav. at 1.5mm nom. thickn.	HB/* ^[DS]	class		IEC 60695-11-10
Thickness tested	1.5/* ^[DS]	mm		IEC 60695-11-10
Oxygen index	23/*	%		ISO 4589-1/-2
FMVSS Class	B ^[OT]			ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	25	mm/min		ISO 3795 (FMVSS 302)

[DS]: Derived from similar grade
[OT]: One time tested

Electrical properties

	dry/cond.			
Electric strength	33/-	kV/mm		IEC 60243-1
Comparative tracking index	600 ^[3] -			IEC 60112

[3]: CTI measured up to 700V

Physical/Other properties

	dry/cond.			
Humidity absorption, 2mm	1.8/*	%		Sim. to ISO 62
Water absorption, 2mm	6/*	%		Sim. to ISO 62
Density	1430/-	kg/m ³		ISO 1183
Density of melt	1260 ^[DS]	kg/m ³		

[DS]: Derived from similar grade

Injection

Drying Recommended	yes
Drying Temperature	80 °C
Drying Time, Dehumidified Dryer	2 - 4 h
Processing Moisture Content	≤0.2 %
Melt Temperature Optimum	285 °C

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Min. melt temperature	280 °C
Max. melt temperature	290 °C
Screw tangential speed	≤0.2 m/s
Mold Temperature Optimum	100 °C
Min. mould temperature	70 °C
Max. mould temperature	120 °C
Hold pressure range	50 - 100 MPa
Hold pressure time	3 s/mm
Ejection temperature	210 °C

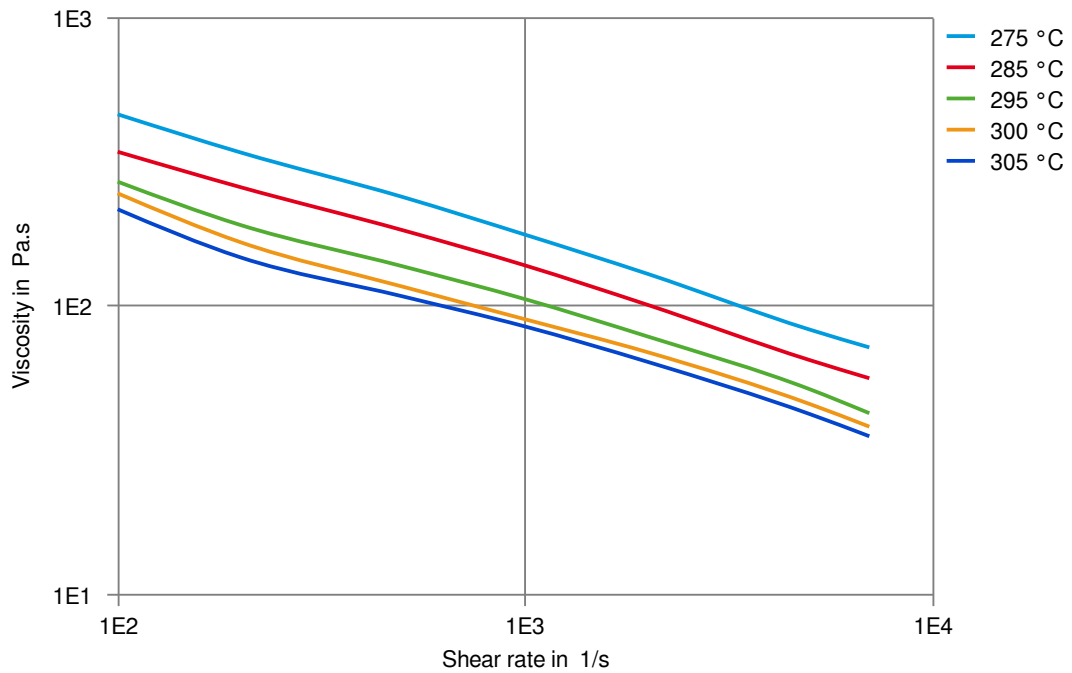
Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Release agent, Low halide content
Special characteristics	Heat stabilised or stable to heat, Laser Markable

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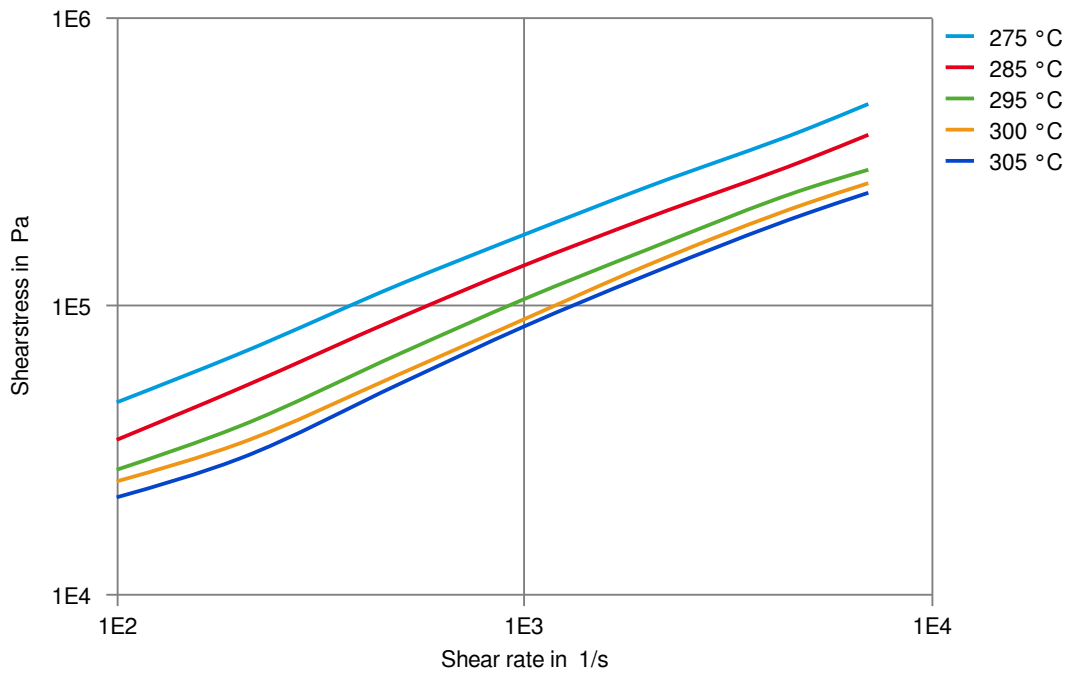
Viscosity-shear rate



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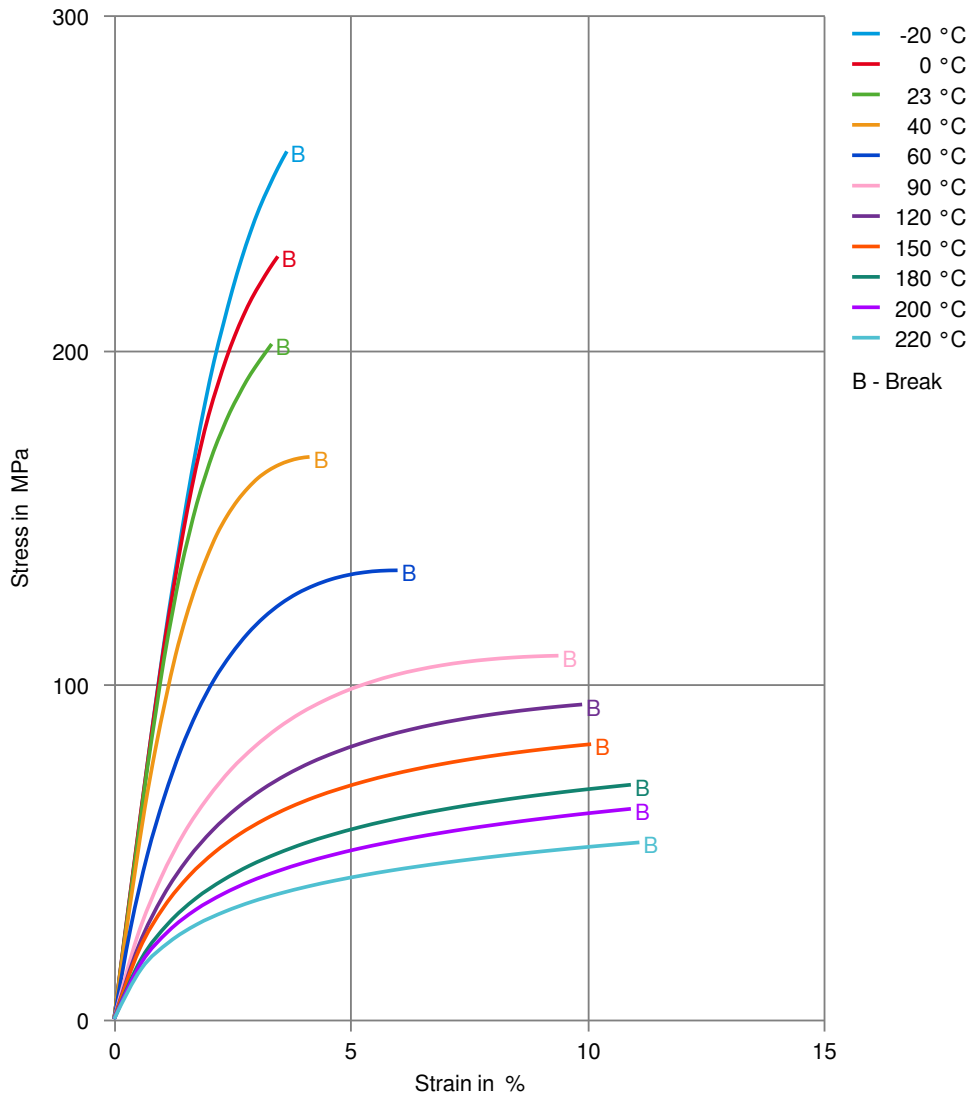
Shearstress-shear rate



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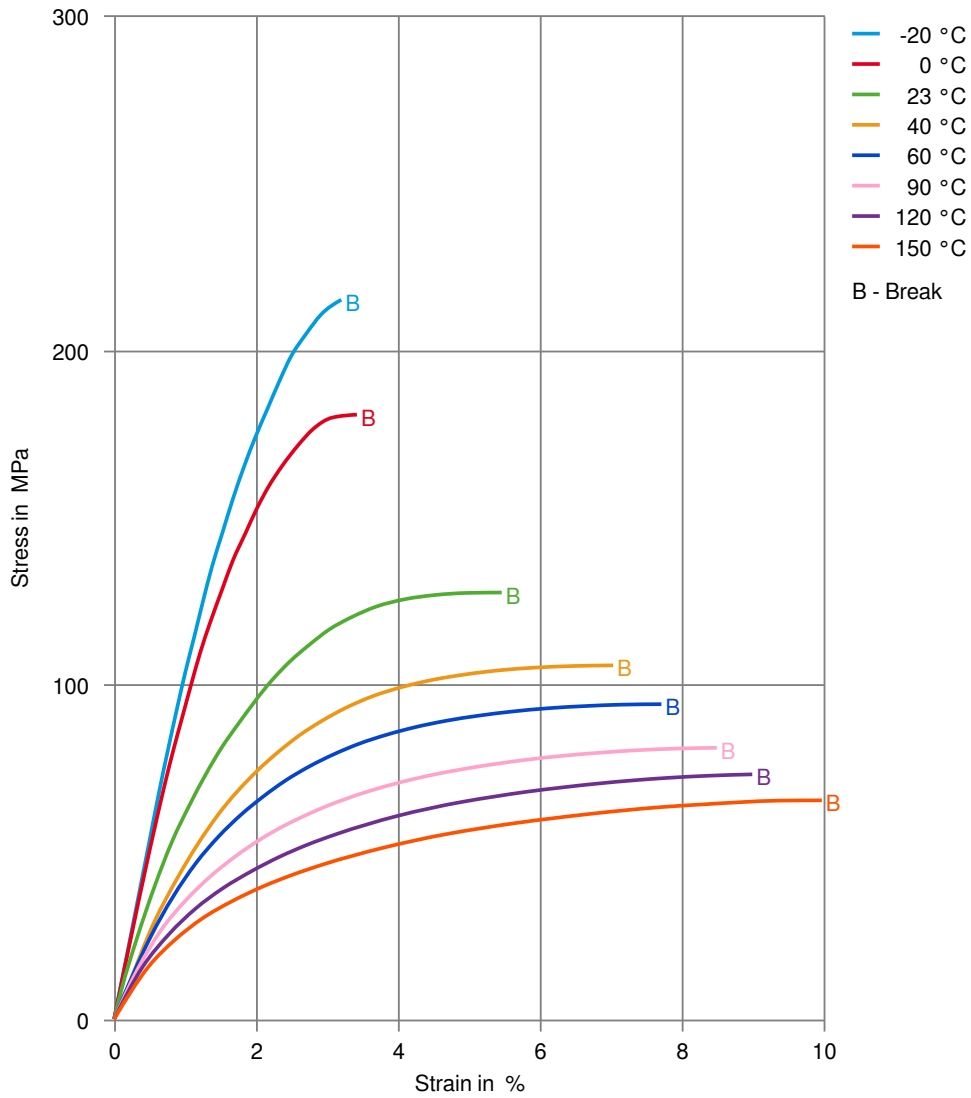
Stress-strain (dry)
(measured on Zytel® PLS95G35DH1 BK549)



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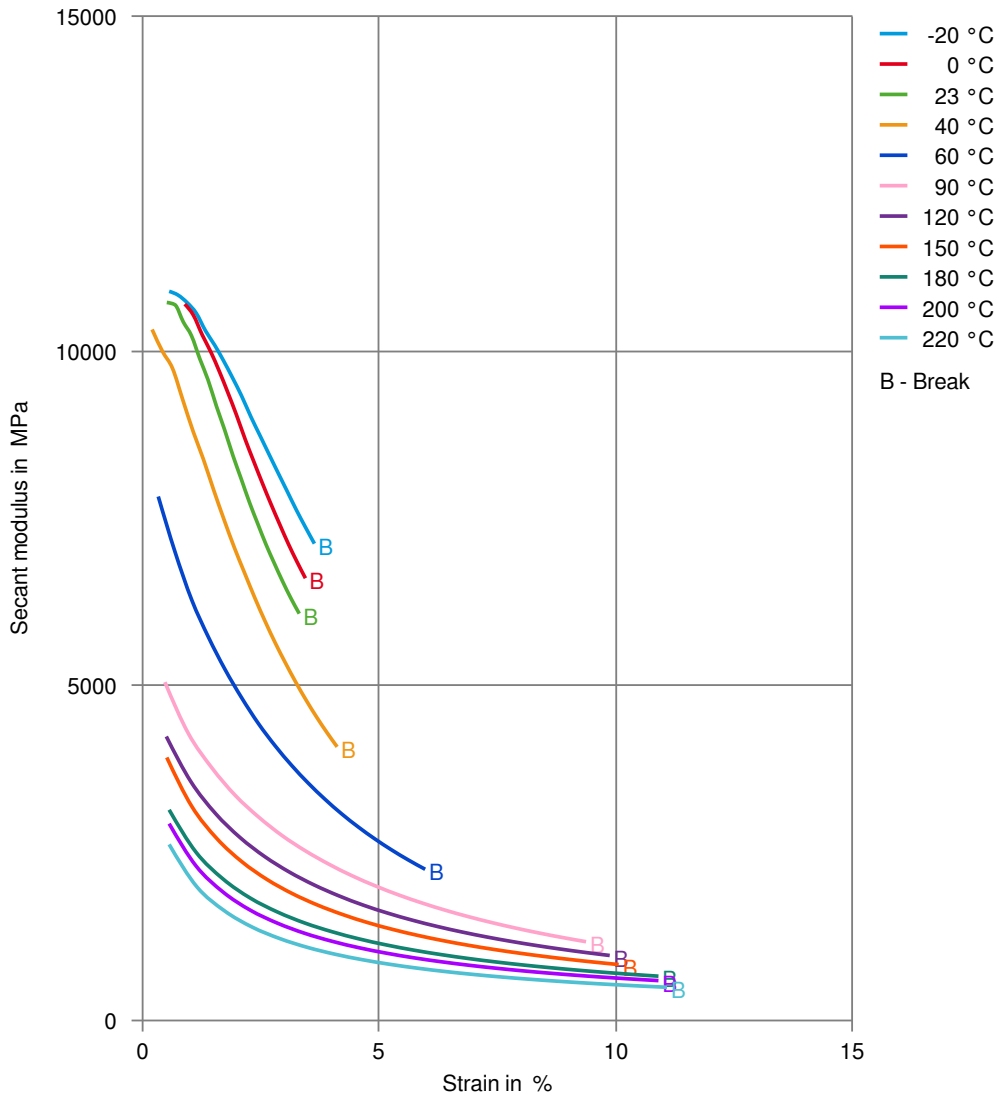
Stress-strain (cond.)
(measured on Zytel® PLS95G35DH1 BK549)



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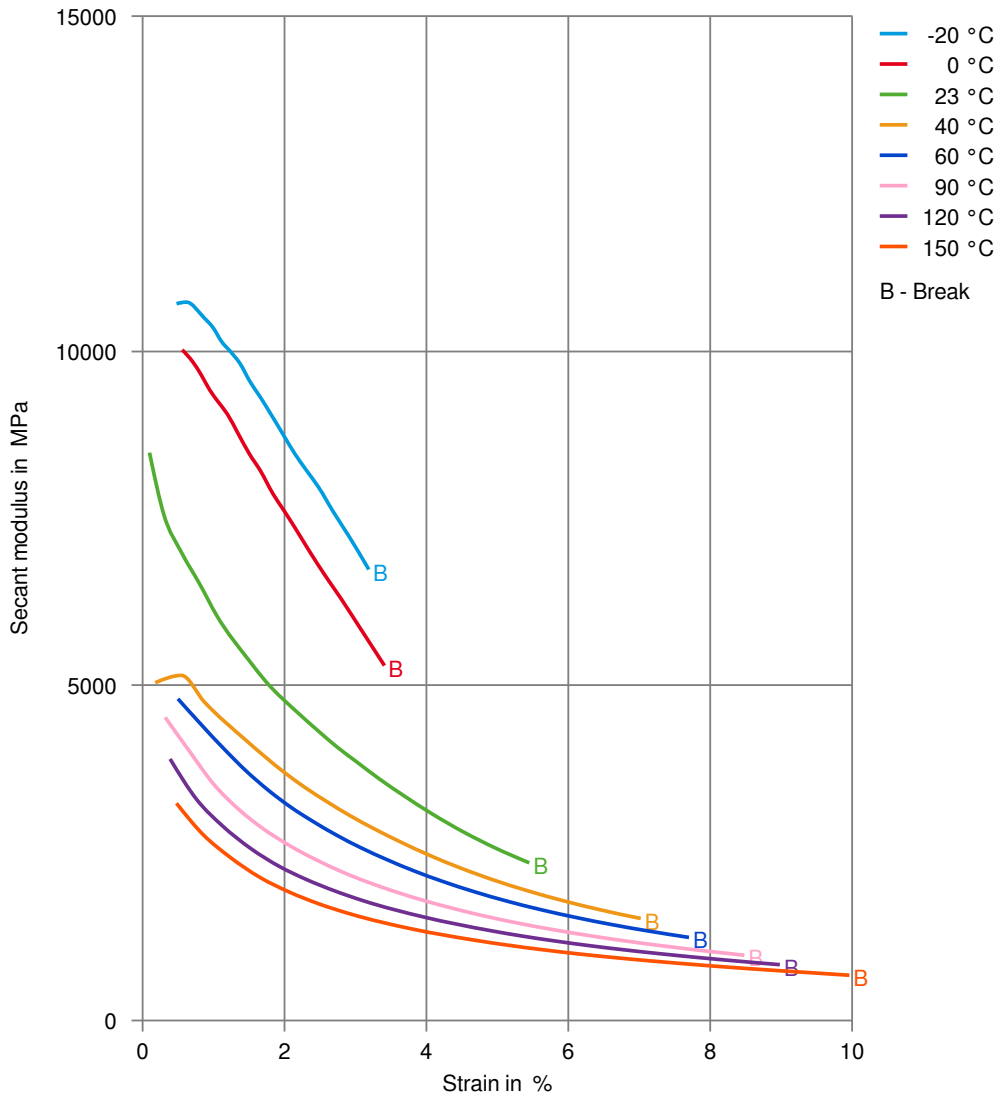
Secant modulus-strain (dry)
(measured on Zytel® PLS95G35DH1 BK549)



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Secant modulus-strain (cond.)
(measured on Zytel® PLS95G35DH1 BK549)



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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

Mineral oils

- ✓ SAE 10W40 multigrade motor oil, 130°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

- ✗ Zinc Chloride solution (50% by mass), 23°C

Other

- ✓ Water, 23°C
- ✗ Water, 90°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).