

Zytel® 70G35HSRX BK099

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® 70G35HSRX BK099 a 35% glass reinforced, heat stabilised, hydrolysis resistant polyamide 66 for injection moulding. Developed for applications designed for direct overmolding of gaskets onto thermoplastic parts. Previously coded FE270056 BK099.

Product information

Resin Identification	PA66-GF35	ISO 1043
Part Marking Code	>PA66-GF35<	ISO 11469
ISO designation	ISO 16396-PA66,GF35,M1CGHRW,S14-120	

Rheological properties

	dry/cond.		
Moulding shrinkage, parallel	0.4 / -	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.1 / -	%	ISO 294-4, 2577
Melt viscosity , @ 1000 sec-1, 280°C	220 / *	Pa.s	ISO 11443

Typical mechanical properties

	dry/cond.		
Tensile modulus	11500 / 9000	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	215 / 140	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	3.2 / 5	%	ISO 527-1/-2
Tensile creep modulus, 1h	* / 8500	MPa	ISO 899-1
Tensile creep modulus, 1000h	* / 6500	MPa	ISO 899-1
Charpy impact strength, 23°C	85 / 100	kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	80 / 70	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	13 / 18	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	10 / 10	kJ/m ²	ISO 179/1eA
Puncture energy, 23°C	6 / -	J	ISO 6603-2
Izod notched impact strength, 23°C	12 / 15	kJ/m ²	ISO 180/1A
Ball indentation hardness, H 961/30	285 / -	MPa	ISO 2039-1
Poisson's ratio	0.33 / 0.34		

Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	261 / *	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	70 / 20	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	247 / *	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	260 / *	°C	ISO 75-1/-2

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Coefficient of linear thermal expansion (CLTE), parallel	17 / *	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	85 / *	E-6/K	ISO 11359-1/-2
Thermal conductivity of melt	0.24	W/(m K)	ISO 22007-2
Specific heat capacity of melt	2130	J/(kg K)	ISO 22007-4

Flammability

	dry/cond.		
Burning Behav. at 1.5mm nom. thickn. Thickness tested	HB / *	class	IEC 60695-11-10
Burning Behav. at thickness h Thickness tested	1.5 / *	mm	IEC 60695-11-10
Oxygen index	HB / *	class	IEC 60695-11-10
FMVSS Class	0.7 / *	mm	IEC 60695-11-10
Burning rate, Thickness 1 mm	21 / *	%	ISO 4589-1/-2
	B		ISO 3795 (FMVSS 302)
	26	mm/min	ISO 3795 (FMVSS 302)

Electrical properties

	dry/cond.		
Relative permittivity, 1MHz	4.1 / 4.7		IEC 62631-2-1
Dissipation factor, 1MHz	140 / 620	E-4	IEC 62631-2-1
Volume resistivity	1E13 / 1E9	Ohm.m	IEC 62631-3-1
Surface resistivity	* / 1E13	Ohm	IEC 62631-3-2
Comparative tracking index	425 / -		IEC 60112

Physical/Other properties

	dry/cond.		
Humidity absorption, 2mm	1.7 / *	%	Sim. to ISO 62
Water absorption, 2mm	5.5 / *	%	Sim. to ISO 62
Density	1420 / -	kg/m ³	ISO 1183
Density of melt	1240	kg/m ³	

VDA Properties

	dry/cond.		
Odour	3	class	VDA 270
Fogging, G-value (condensate)	0.5 / *	mg	ISO 6452

Injection

Drying Recommended	yes
Drying Temperature	80 °C
Drying Time, Dehumidified Dryer	2 - 4 h
Processing Moisture Content	≤0.2 %
Melt Temperature Optimum	295 °C
Min. melt temperature	285 °C
Max. melt temperature	305 °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

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Ejection temperature 210 °C

Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Release agent
Special characteristics	Heat stabilised or stable to heat, Hydrolysis resistant

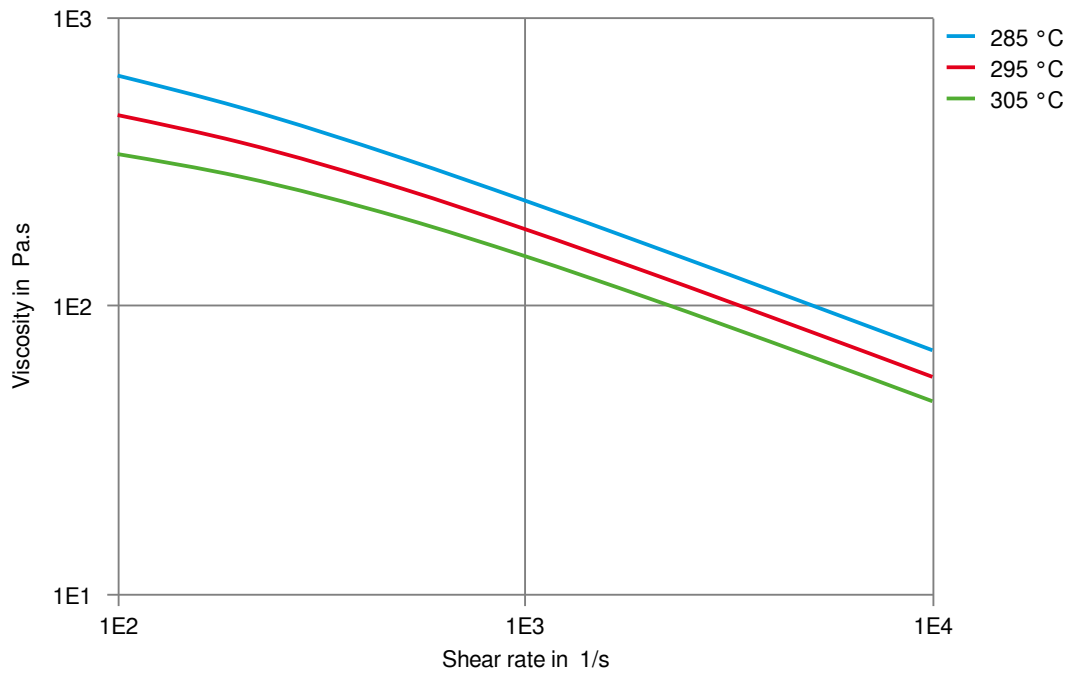
Automotive

OEM	STANDARD
Mercedes-Benz	DBL5408.50 PA66 GF35
Mercedes-Benz	DBL5409.25 PA66 GF35
Stellantis	50572
VW Group	VW 50133 PA66-7-A

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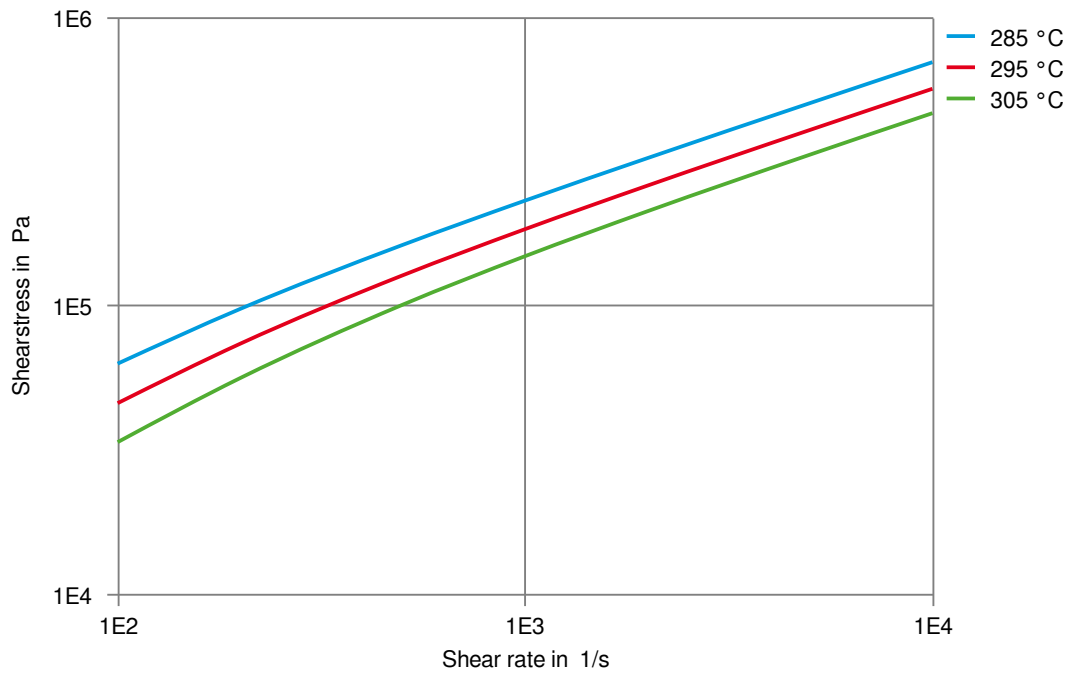
Viscosity-shear rate



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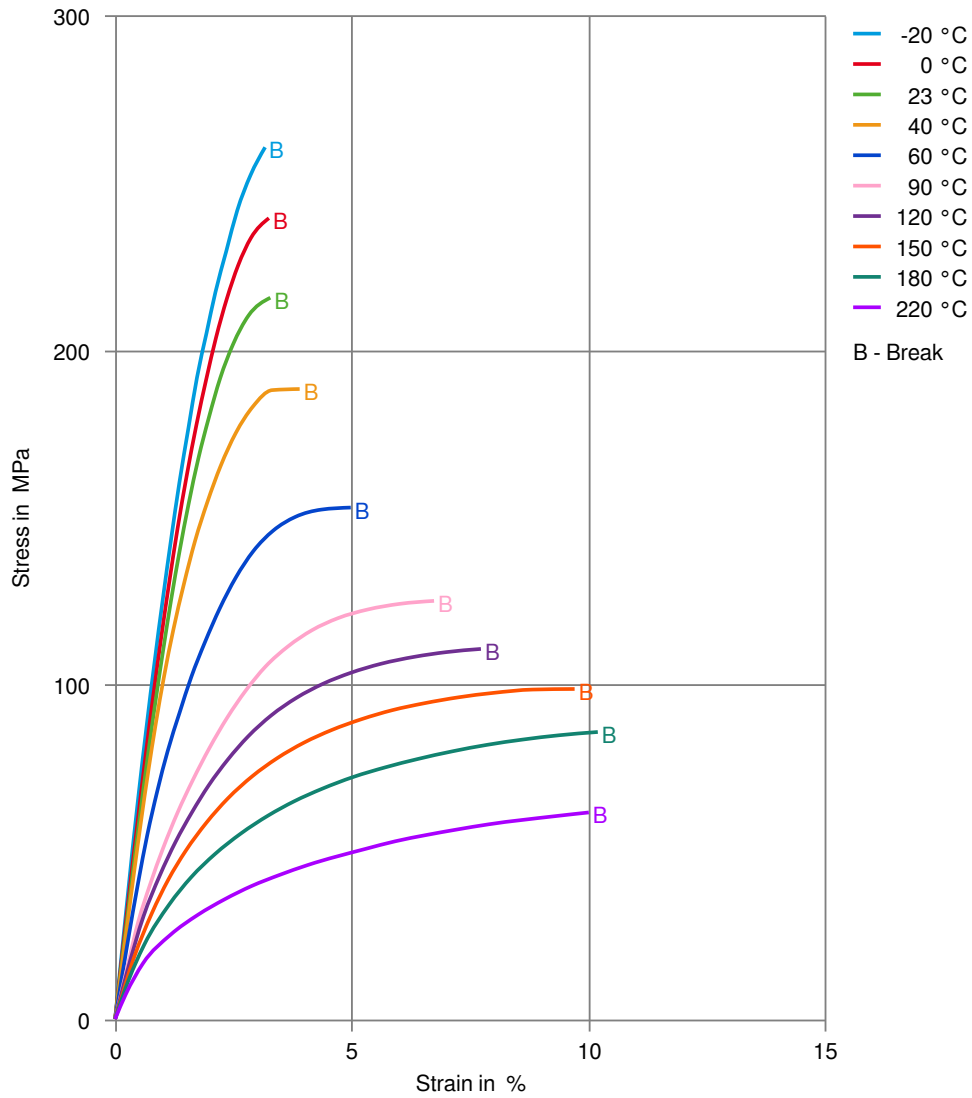
Shearstress-shear rate



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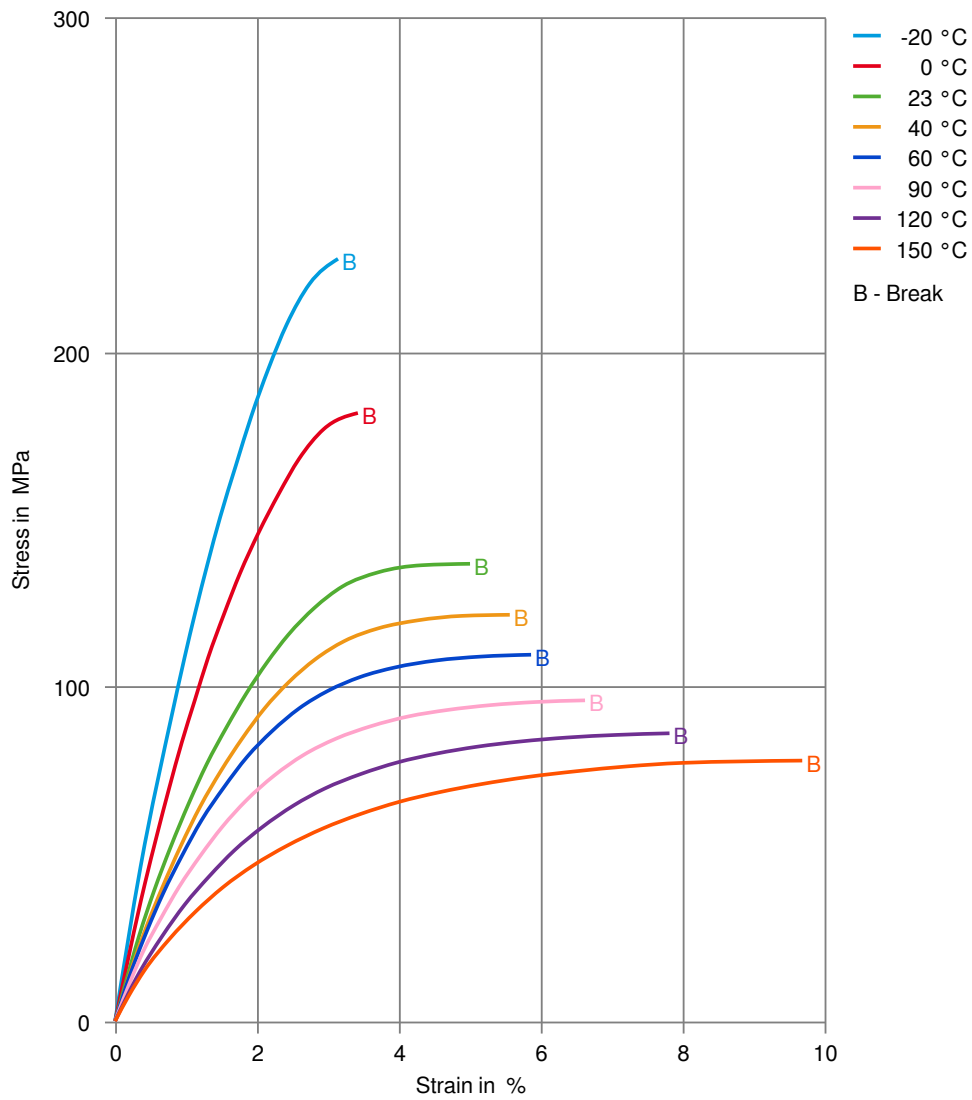
Stress-strain (dry)



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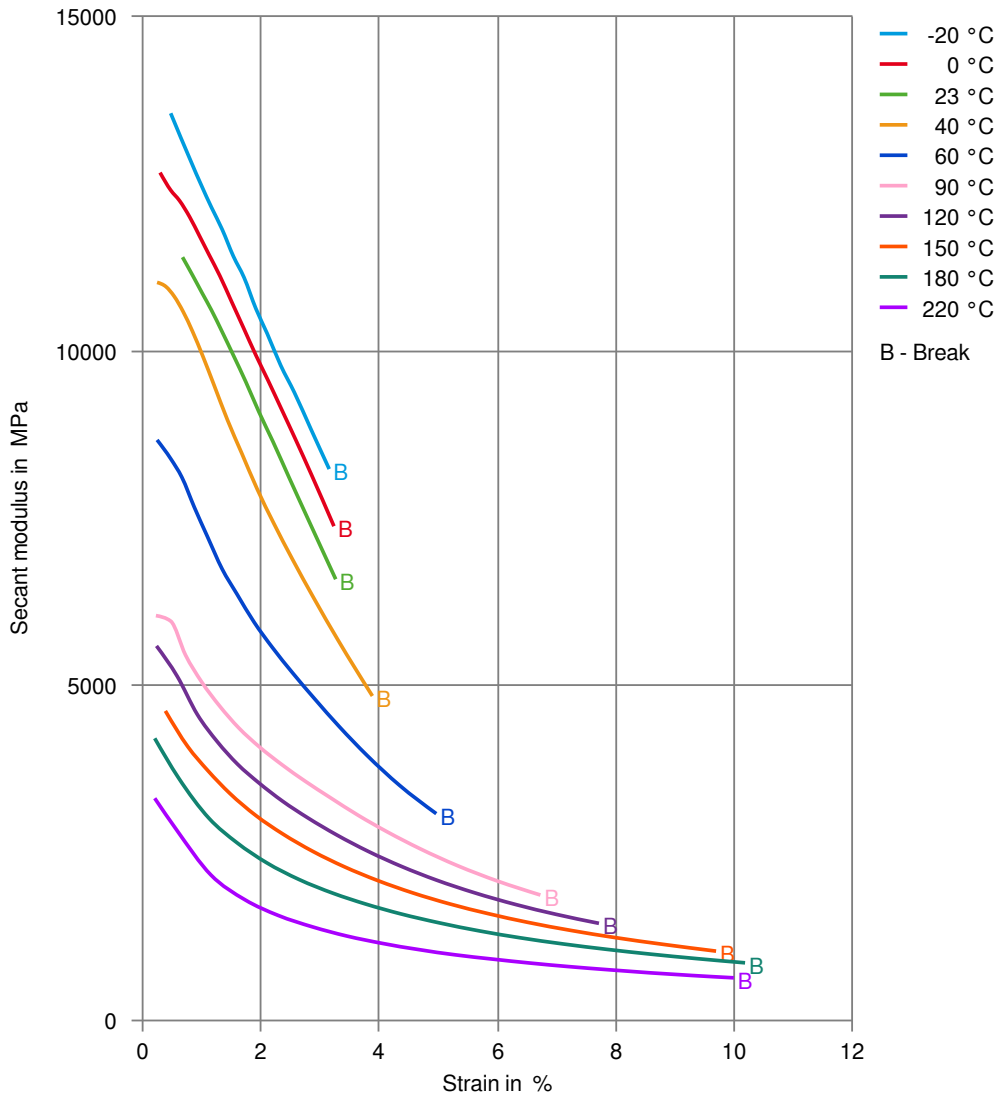
Stress-strain (cond.)



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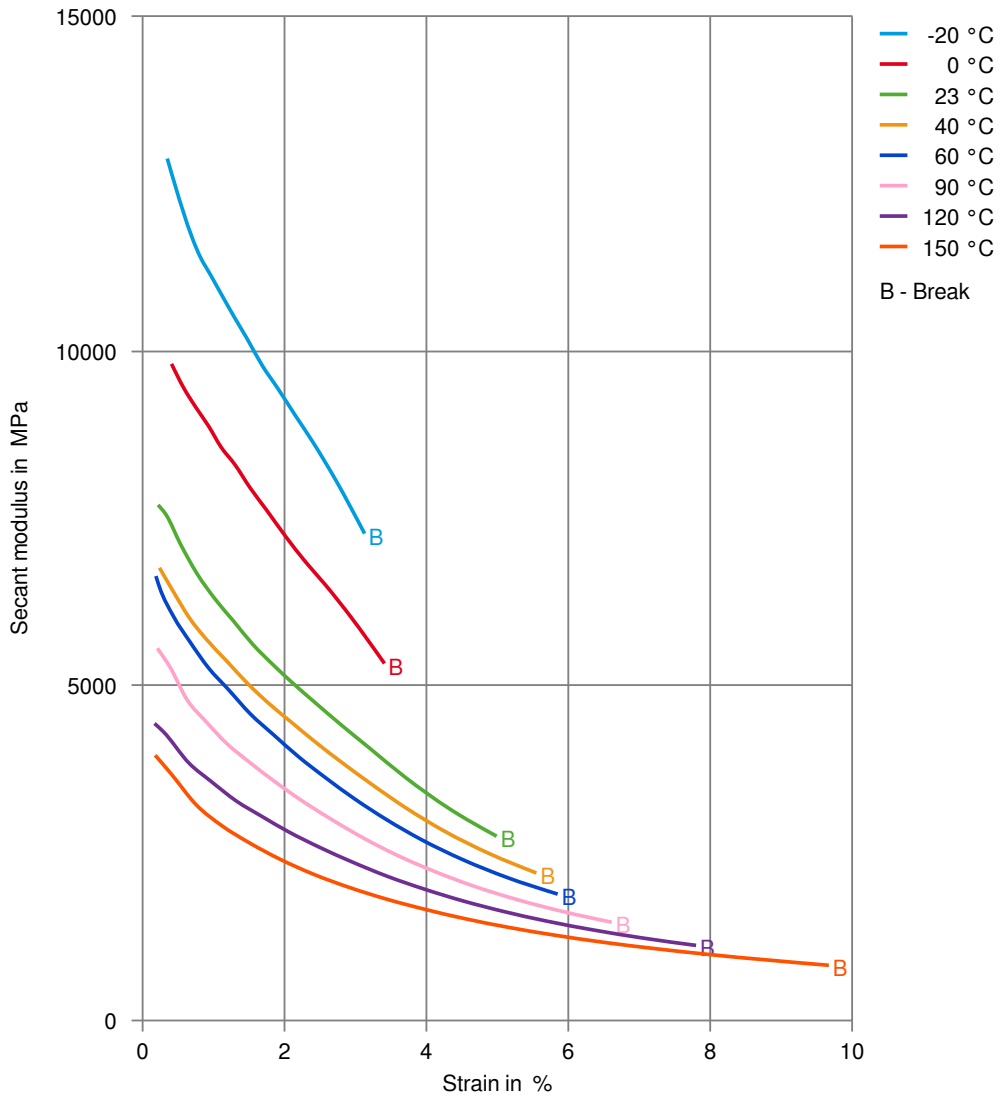
Secant modulus-strain (dry)



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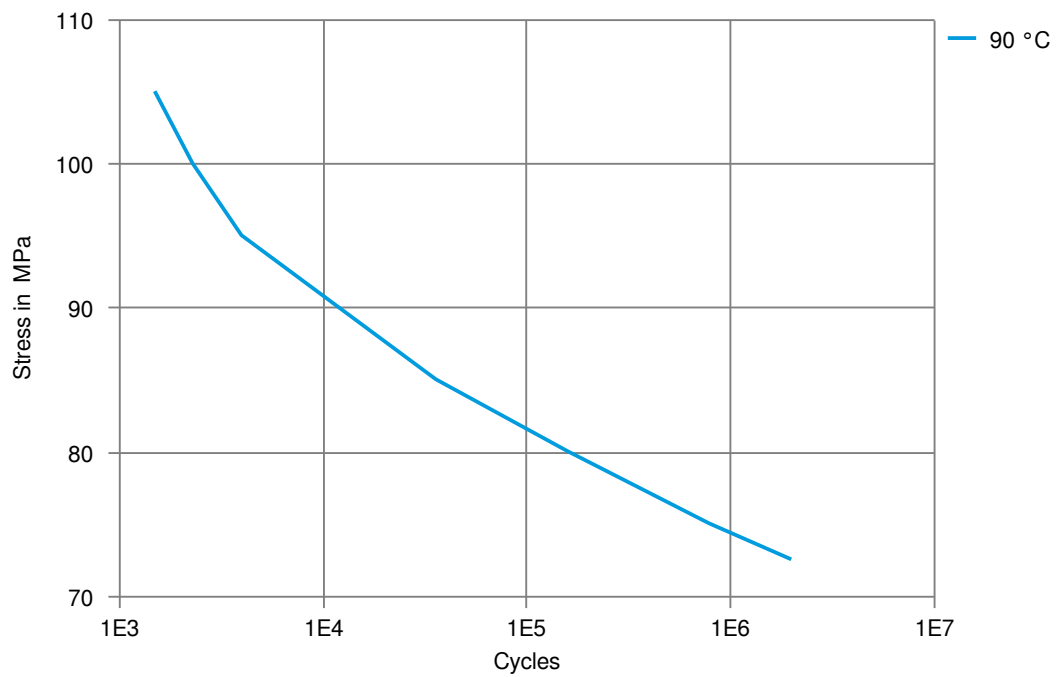
Secant modulus-strain (cond.)



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Tensile Fatigue, 10Hz, R=0.1 @ 4mm (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

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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
- ✓ 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).