Celanese
The chemistry inside innovation™

Zytel® BM73G15THS BK317

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® BM73G15THS is a 15% glass fibre reinforced, heat stabilised, lubricated, toughened polyamide 6 for blow moulding.

Product information

Resin Identification	PA6-IGF15	ISO 1043
Part Marking Code	>PA6-IGF15<	ISO 11469
ISO designation	ISO 16396-PA6-I,GF15,M1CGHR,S14-050	

Rheological properties

	dry/cond.		
Moulding shrinkage, parallel	0.4[1]/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.6 / -	%	ISO 294-4, 2577
Melt viscosity , @ 1000 sec-1, 280 °C	300 / *	Pa.s	ISO 11443

[1]: Blow-molding shrinkage : Parallel 0.7% Normal 1.2%

Typical mechanical properties

	dry/cond.		
Tensile modulus	5000 / 2500	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	100 / 65	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	4.5 / 23	%	ISO 527-1/-2
Charpy impact strength, 23 °C	80 / 110	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23 °C	21 / 29	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30 °C	13 / 11	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -40 °C	12 / -	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23 °C	21 / 28	kJ/m²	ISO 180/1A
Izod notched impact strength, -30 °C	11.0 / 11.0	kJ/m²	ISO 180/1A
Ball indentation hardness, H 961/30	180 / -	MPa	ISO 2039-1
Poisson's ratio	0.35 / 0.38[A]		

[A]: Assessed

Thermal properties

	dry/cond.		
Melting temperature, 10 °C/min	221 / *	°C	ISO 11357-1/-3
Glass transition temperature, 10 °C/min	60 / 10	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	190 / *	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	215 / *	°C	ISO 75-1/-2

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Flammability

	dry/cond.		
Oxygen index	25 / *	%	ISO 4589-1/-2
FMVSS Class	B		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	<80	mm/min	ISO 3795 (FMVSS 302)

Electrical properties

	dry/cond.		
Dissipation factor, 100Hz	160 / -	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	160 / -	E-4	IEC 62631-2-1
Volume resistivity	1E13 / -	Ohm.m	IEC 62631-3-1
Comparative tracking index	600 / -		IEC 60112

Physical/Other properties

	dry/cond.		
Humidity absorption, 2mm	2.6 / *[DS]	%	Sim. to ISO 62
Water absorption, 2mm	7.5 / *[DS]	%	Sim. to ISO 62
Density	1200 / -	kg/m³	ISO 1183

[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	260	°C
Min. melt temperature	240	°C
Max. melt temperature	270	°C
Screw tangential speed	≤0.2	m/s
Mold Temperature Optimum	80	°C
Min. mould temperature	70	°C
Max. mould temperature	90	°C
Hold pressure range	50 - 100	MPa
Hold pressure time	3	s/mm
Ejection temperature	132	°C

Extrusion

Drying Temperature	80	°C
Drying Time, Dehumidified Dryer	4 - 6	h
Processing Moisture Content	≤0.06	%
Melt Temperature Range	235 - 250	°C

Blow Molding

Drying Recommended	yes	
Drying Temperature	100 - 110	°C
Drying Time, Dehumidified Dryer	4 - 6	h
Processing Moisture Content	≤0.03	%
Melt Temperature Optimum	245	°C
Melt Temperature Range	255 - 265	°C
Swell ratio	1.5	

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Mold Temperature Optimum	90 °C
Mold Temperature Range	80 - 110 °C

Characteristics

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

Automotive

OEM	STANDARD
Hyundai	MS211-72 Type A
VW Group	VW 50134 PA6-3-A

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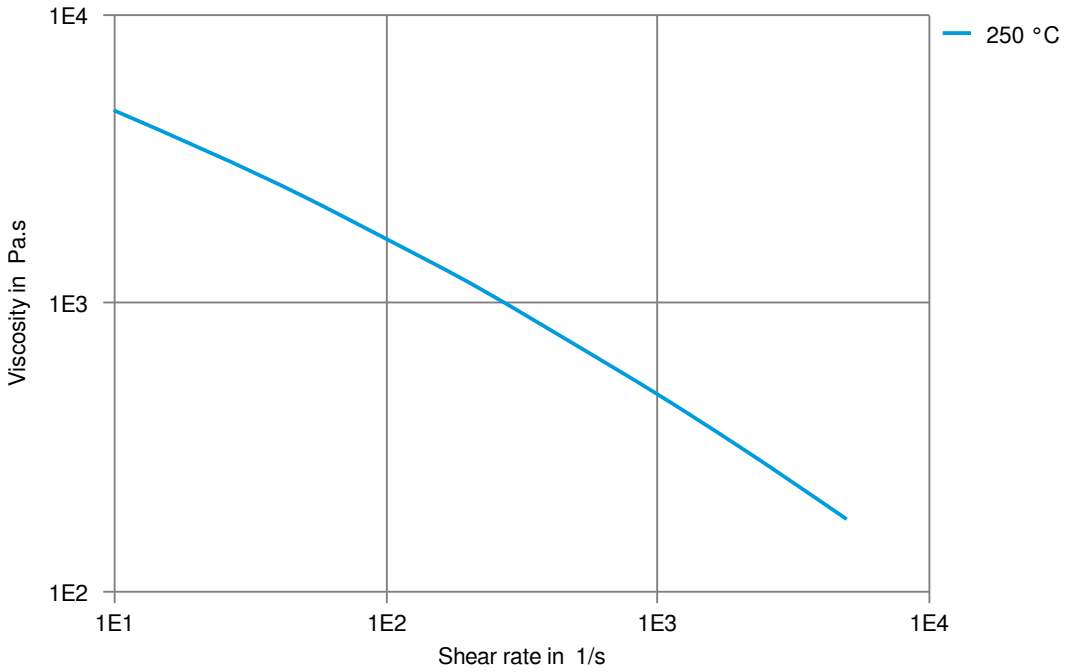
Viscosity-shear rate



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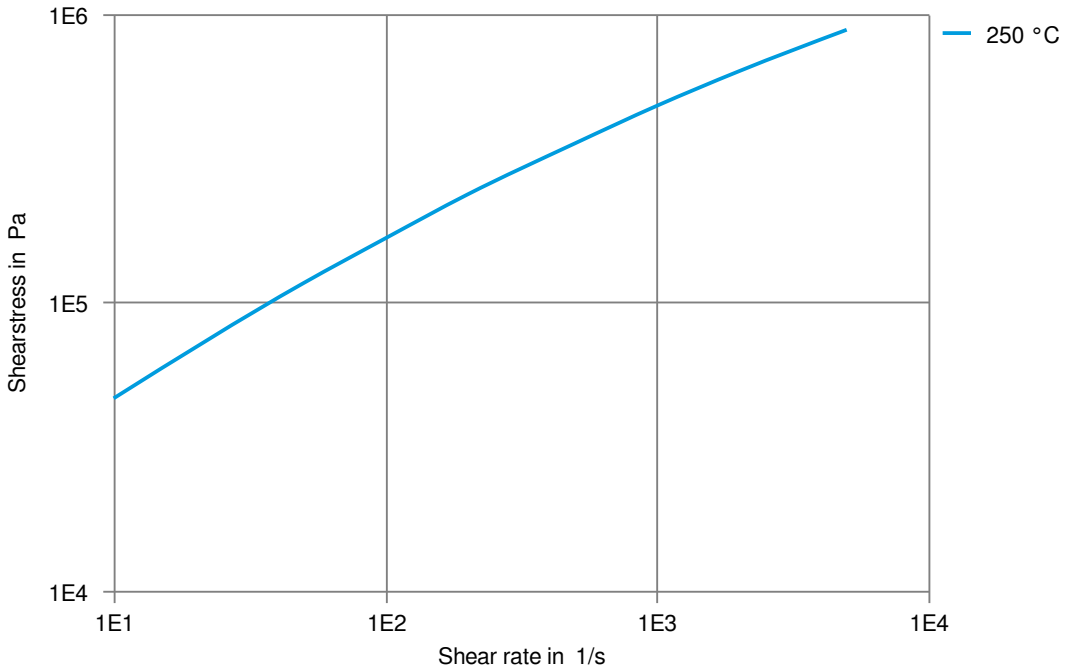
Shearstress-shear rate



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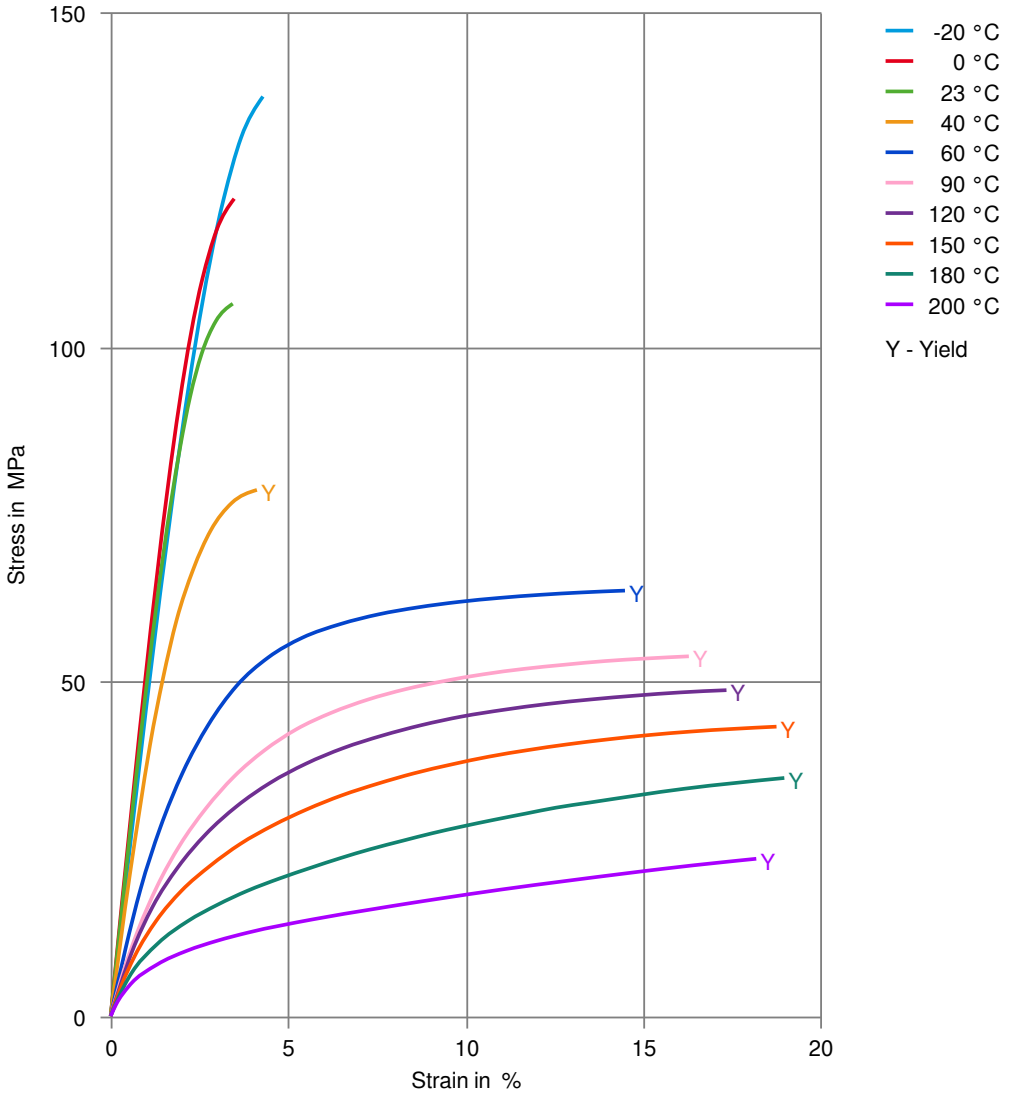
Stress-strain (dry)



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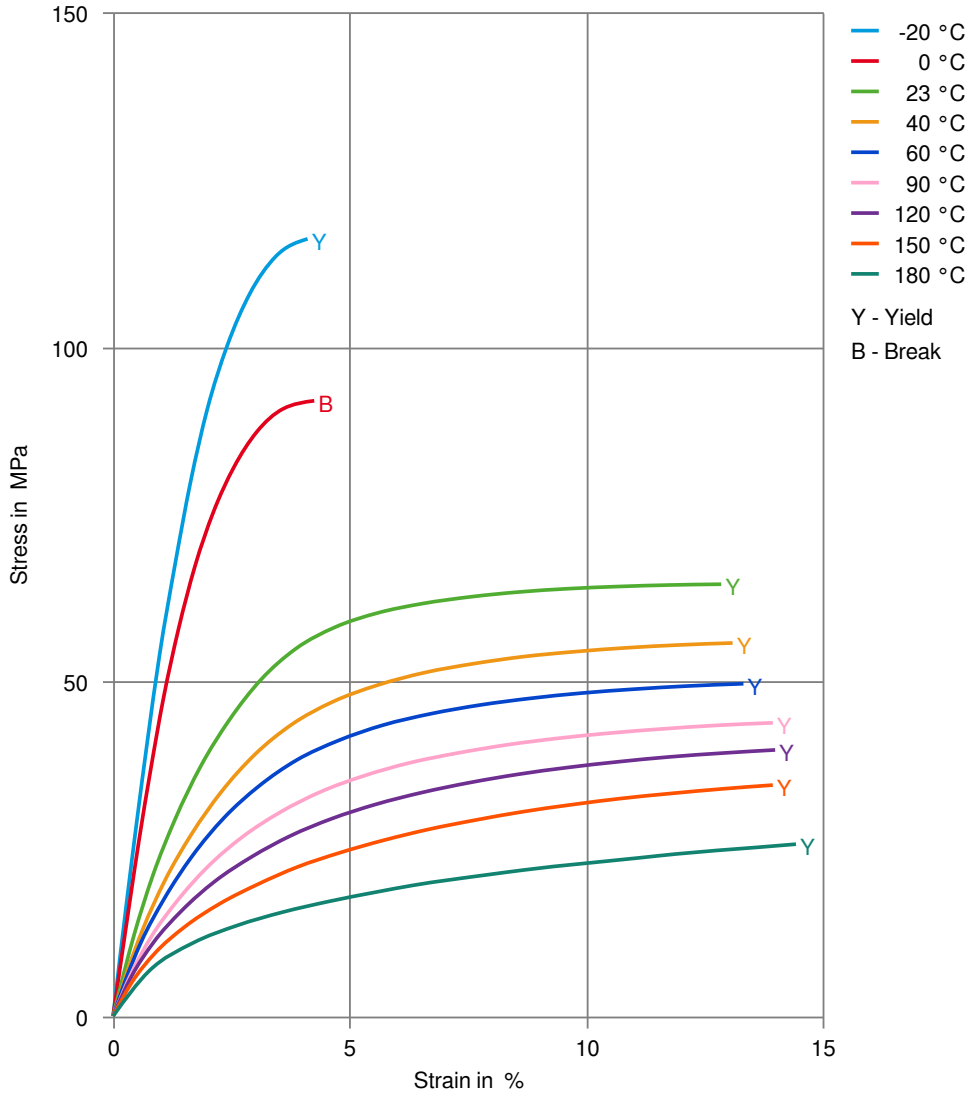
Stress-strain (cond.)



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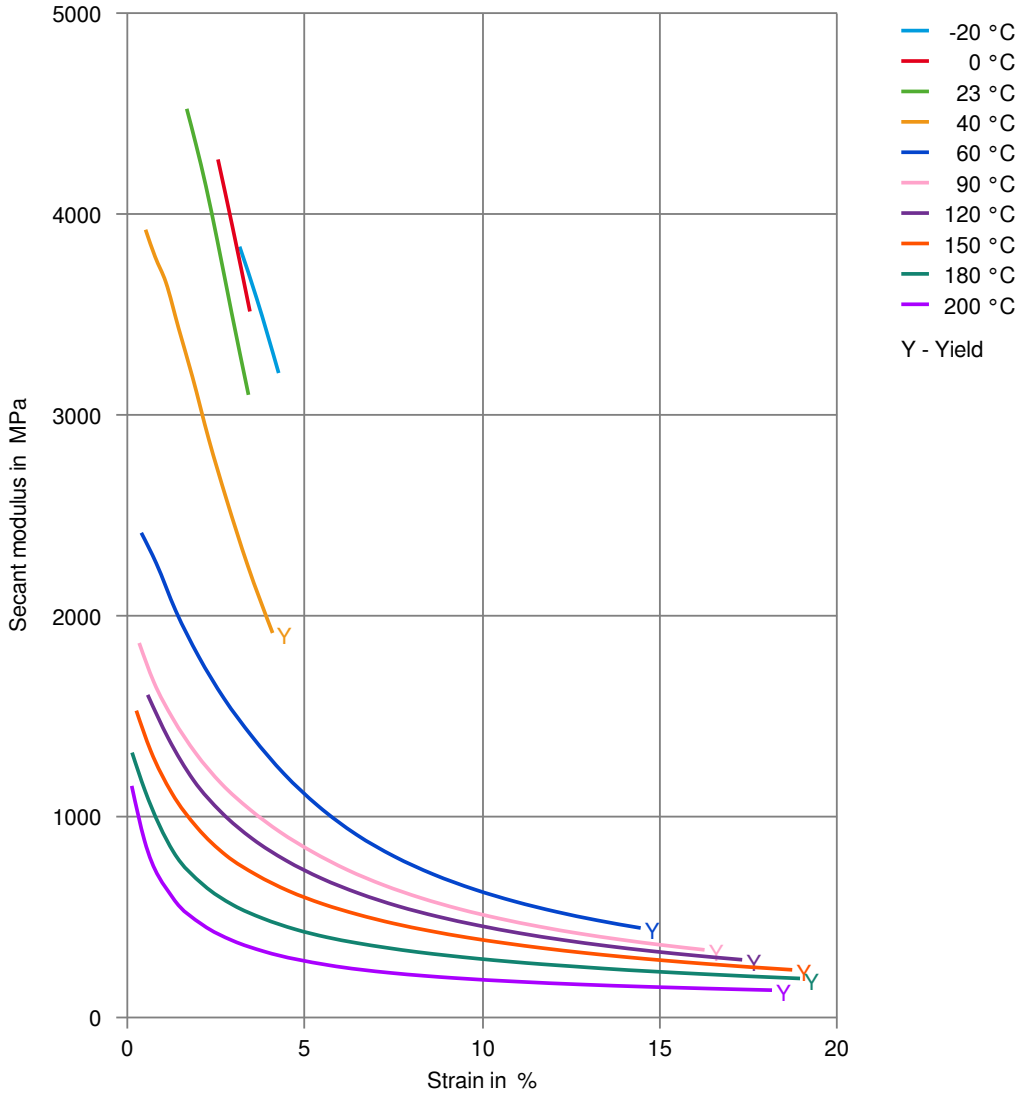
Secant modulus-strain (dry)



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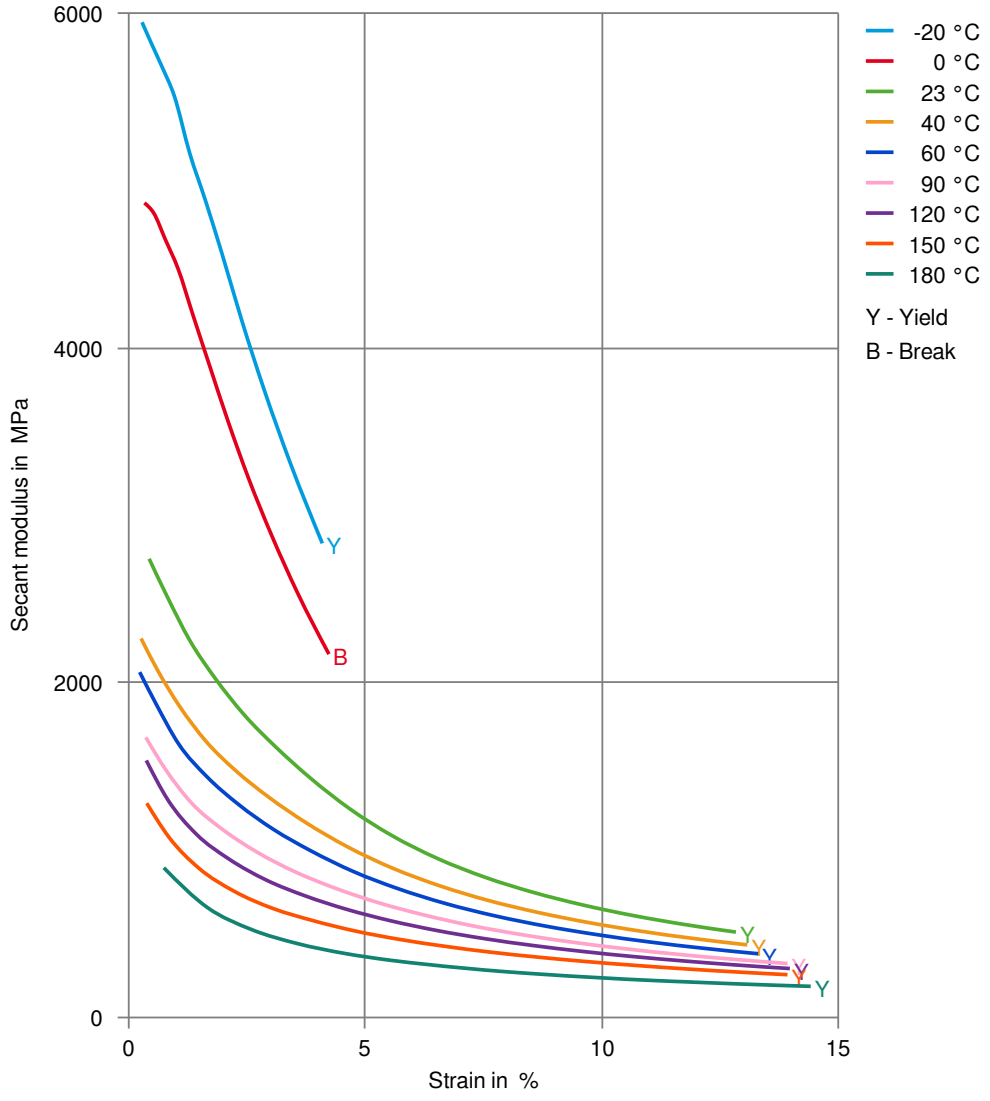
Secant modulus-strain (cond.)



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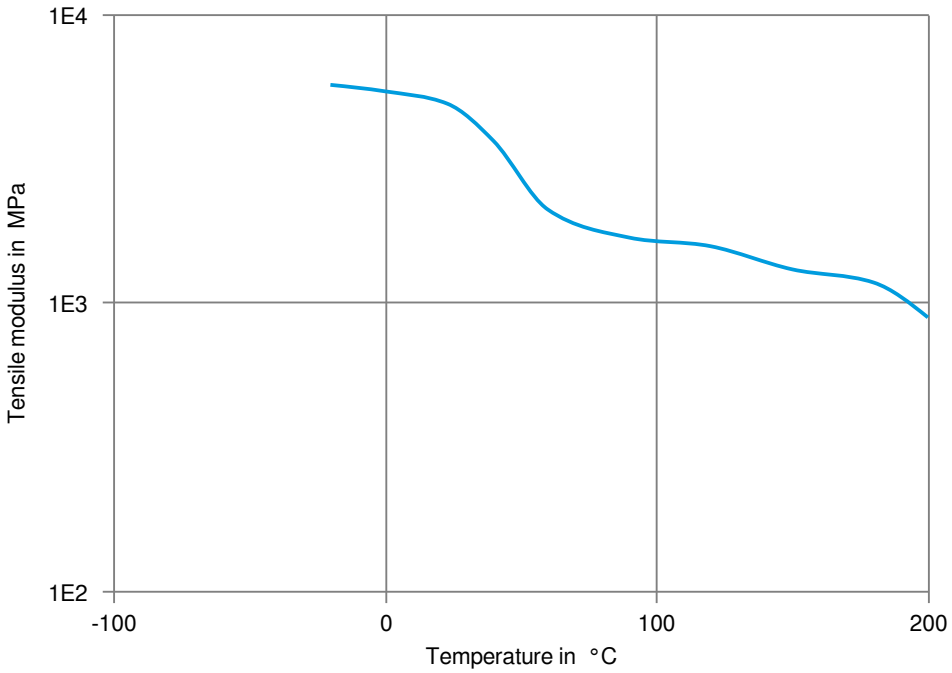
Tensile modulus-temperature (dry)



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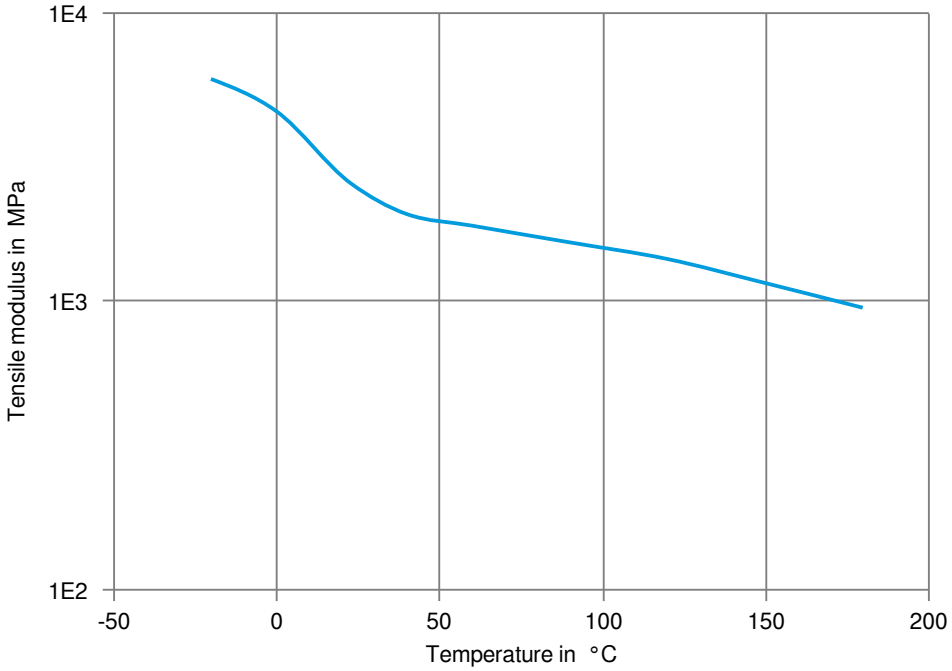
Tensile modulus-temperature (cond.)



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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

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

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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
- ✘ 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).