

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	0.7/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.2/-	%	ISO 294-4, 2577
Melt viscosity, @ 1000 sec-1, 280°C	300/*	Pa.s	ISO 11443

Typical mechanical properties

	dry/cond.		
Tensile Modulus	5000/2500	MPa	ISO 527-1/-2
Stress at break, 5mm/min	100/65	MPa	ISO 527-1/-2
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	11/11	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



Zytel® BM73G15THS BK317

NYLON RESIN

Thermal properties

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

Flammability

Oxygen index	dry/cond.	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

Dissipation factor, 100Hz	dry/cond.	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

Other properties

Humidity absorption, 2mm	dry/cond.	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	270	°C		Internal
Min. melt temperature	260	°C		
Max. melt temperature	280	°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		



Zytel® BM73G15THS BK317

NYLON RESIN

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	110 - 120 °C
Drying Time, Dehumidified Dryer	4 - 6 h
Processing Moisture Content	≤0.03 %
Melt Temperature Optimum	260 °C
Melt Temperature Range	255 - 265 °C
Mold Temperature Optimum	90 °C
Mold Temperature Range	80 - 110 °C

Characteristics

Additives

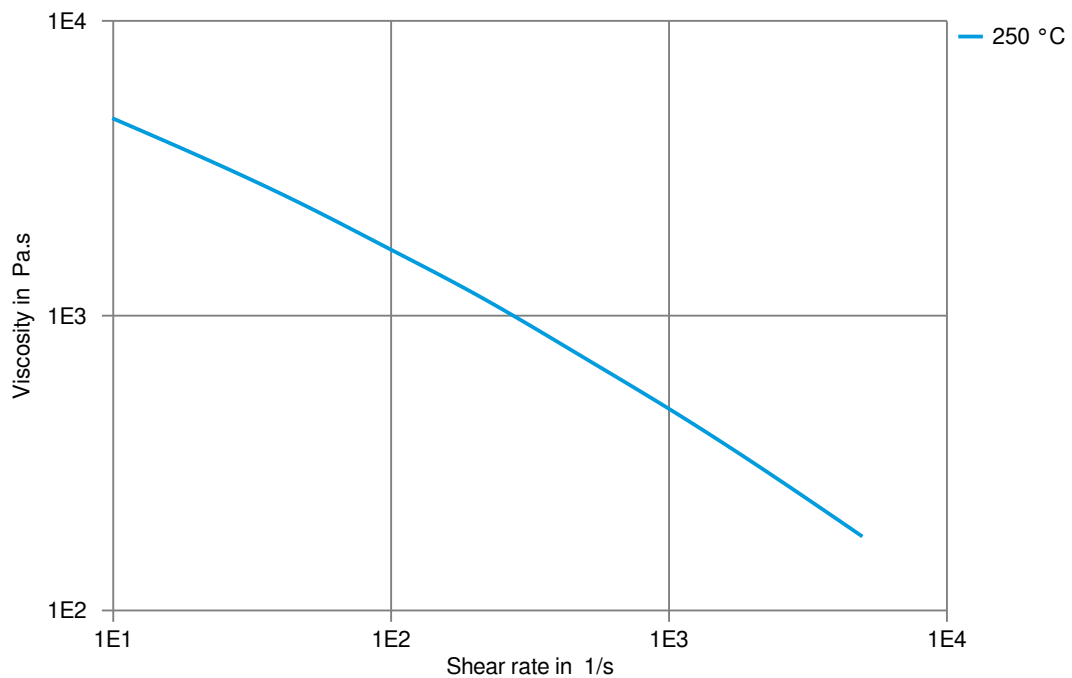
Release agent



Zytel® BM73G15THS BK317

NYLON RESIN

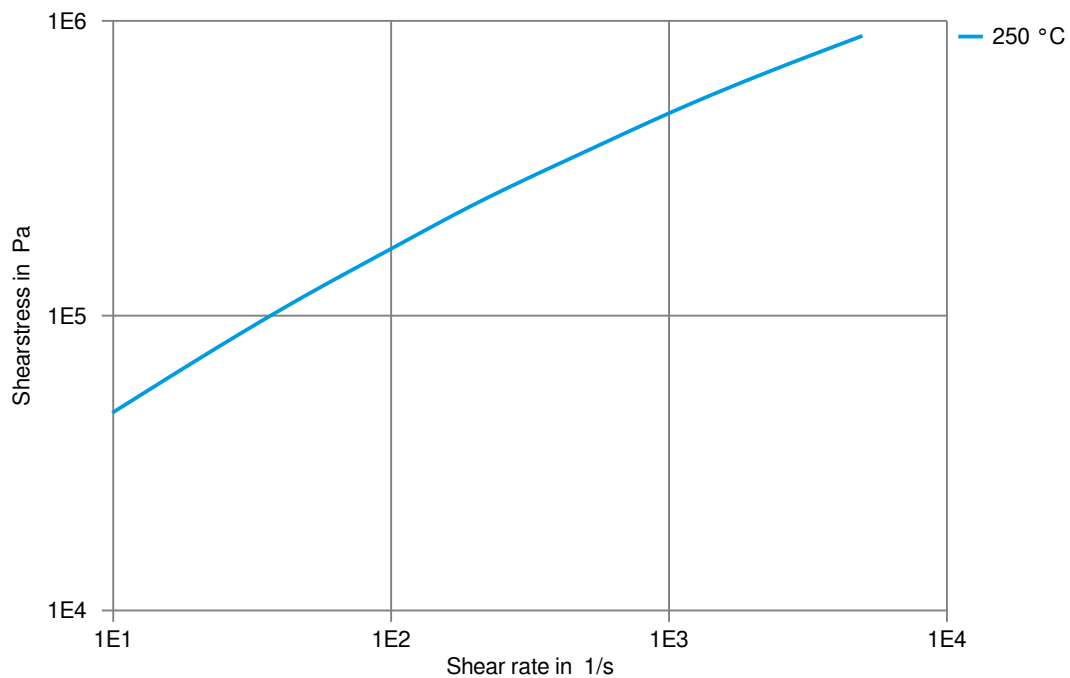
Viscosity-shear rate



Zytel® BM73G15THS BK317

NYLON RESIN

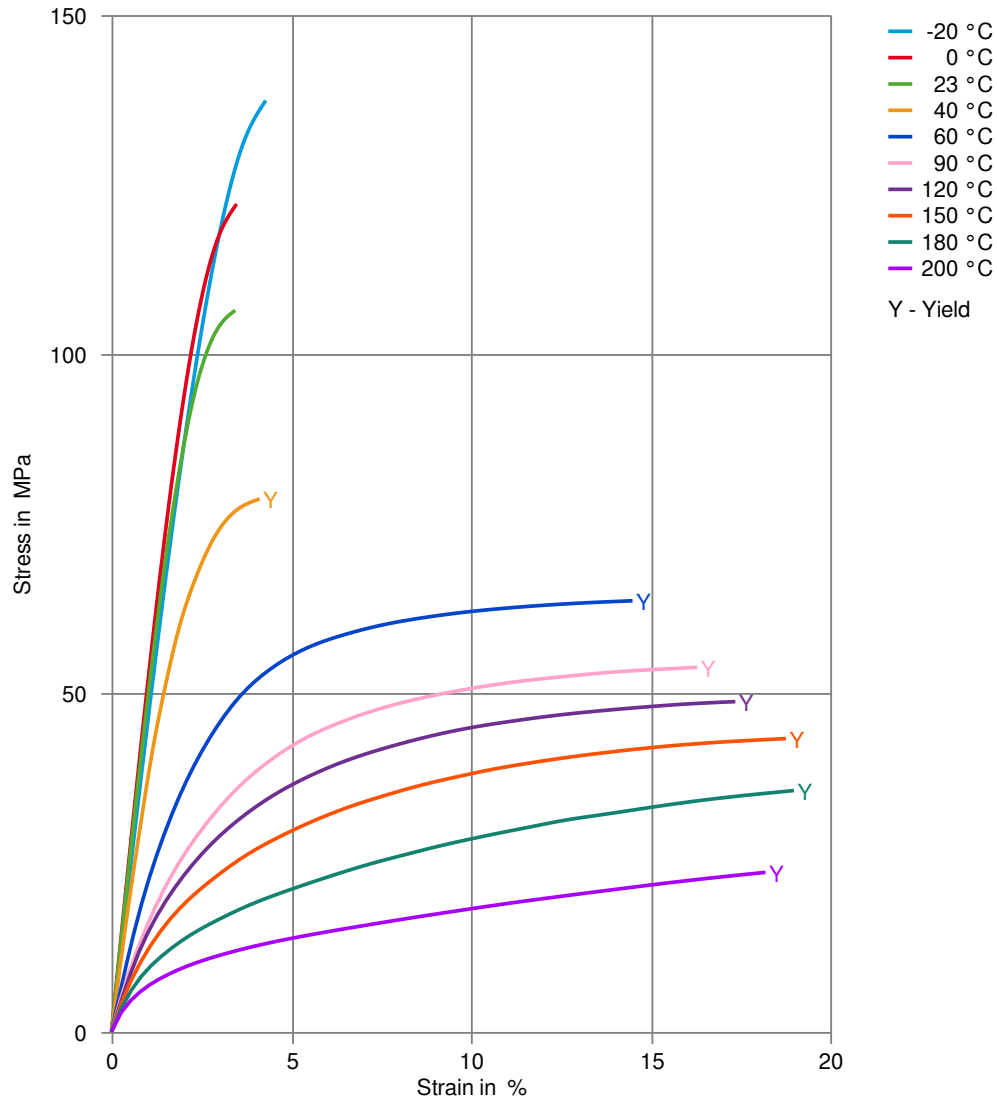
Shearstress-shear rate



Zytel® BM73G15THS BK317

NYLON RESIN

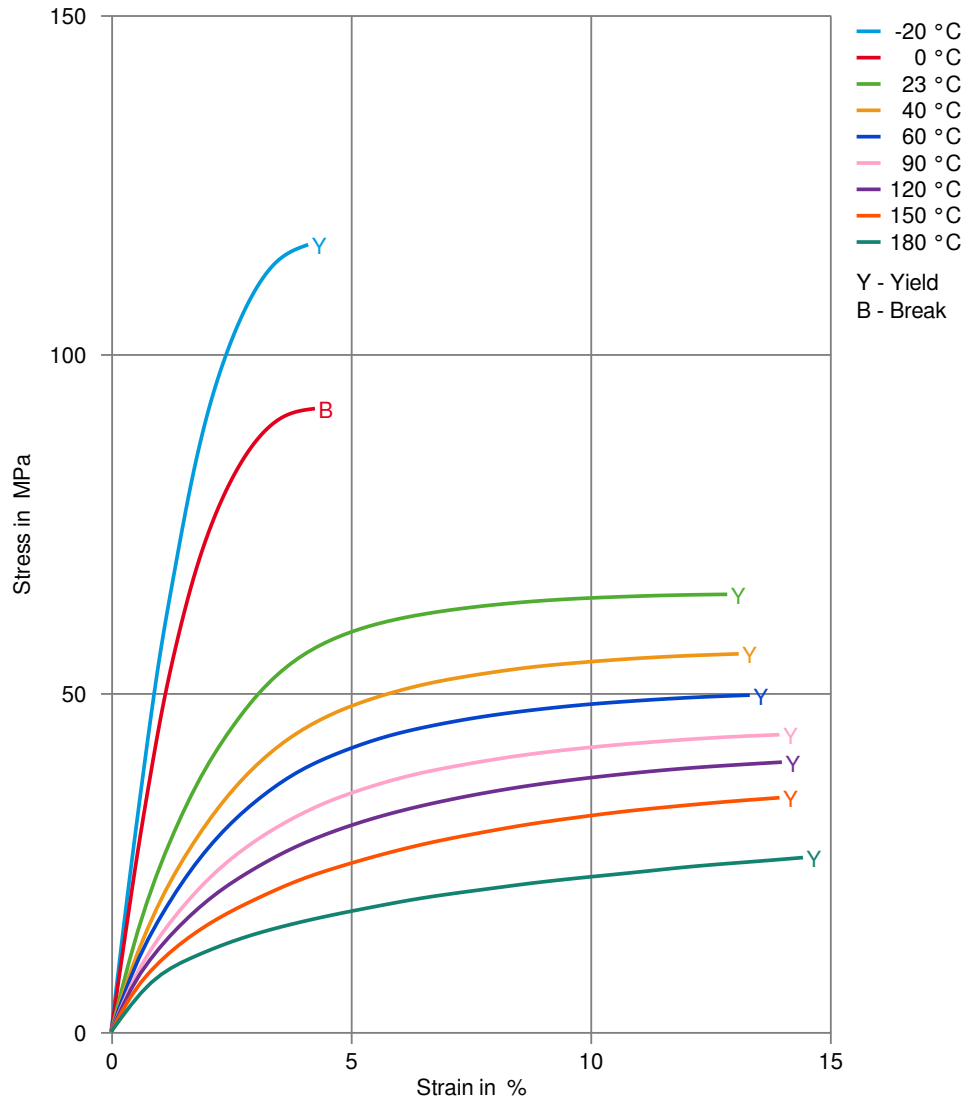
Stress-strain (dry)



Zytel® BM73G15THS BK317

NYLON RESIN

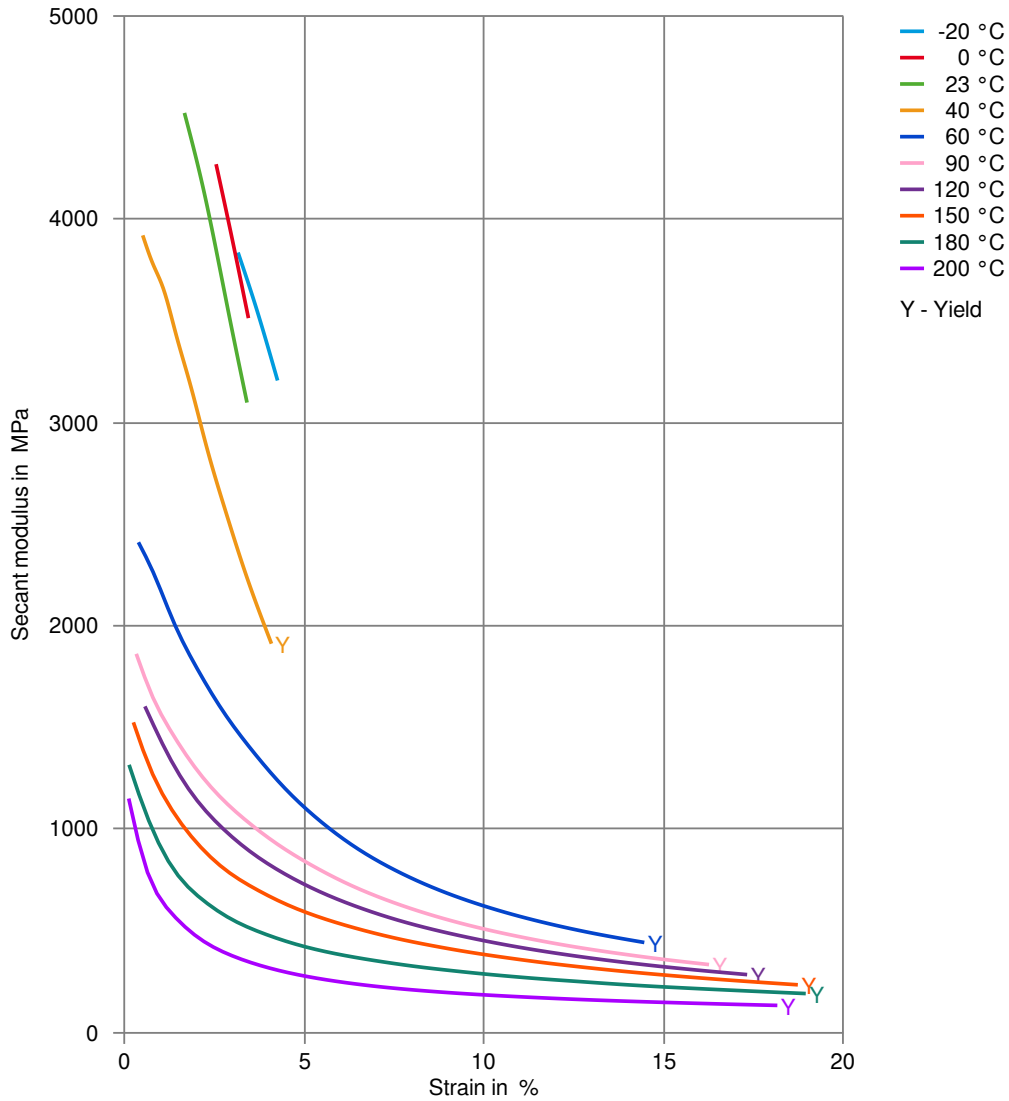
Stress-strain (cond.)



Zytel® BM73G15THS BK317

NYLON RESIN

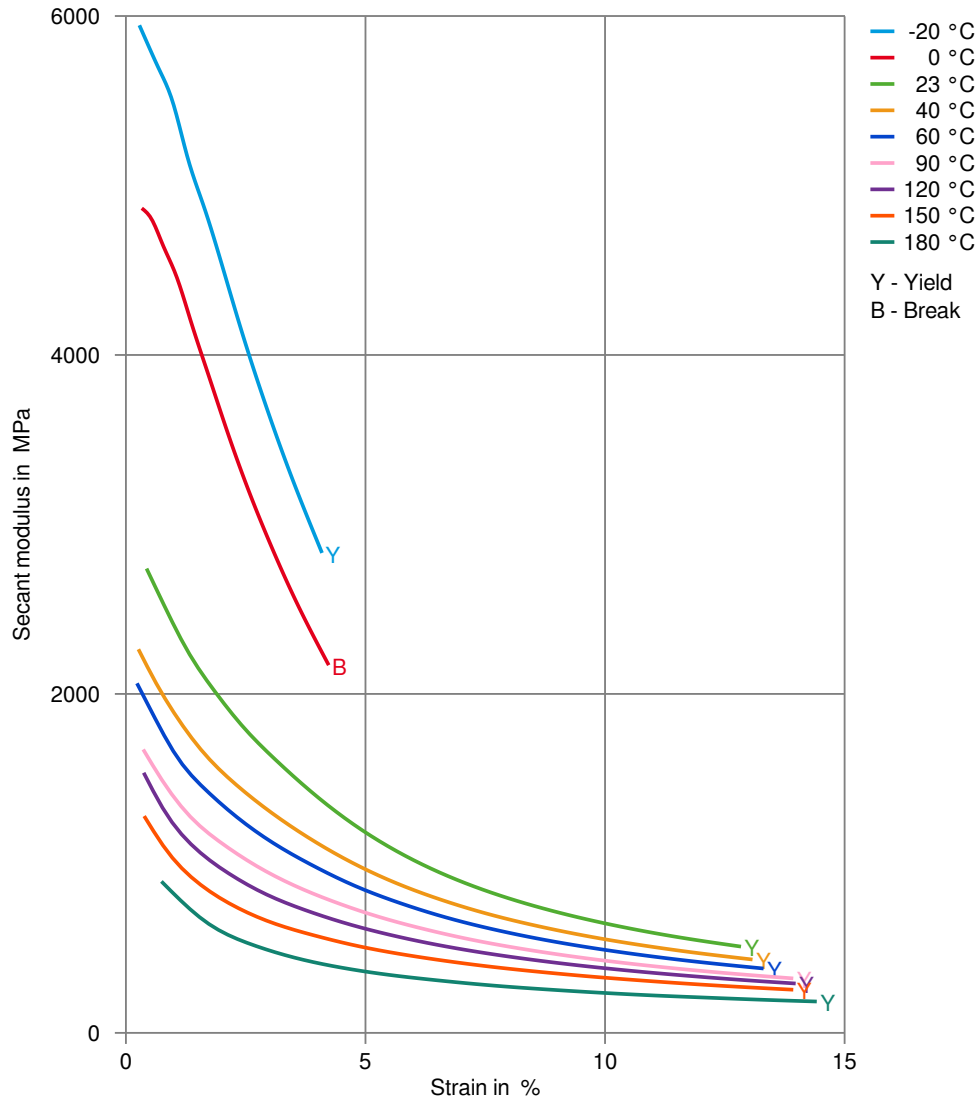
Secant modulus-strain (dry)



Zytel® BM73G15THS BK317

NYLON RESIN

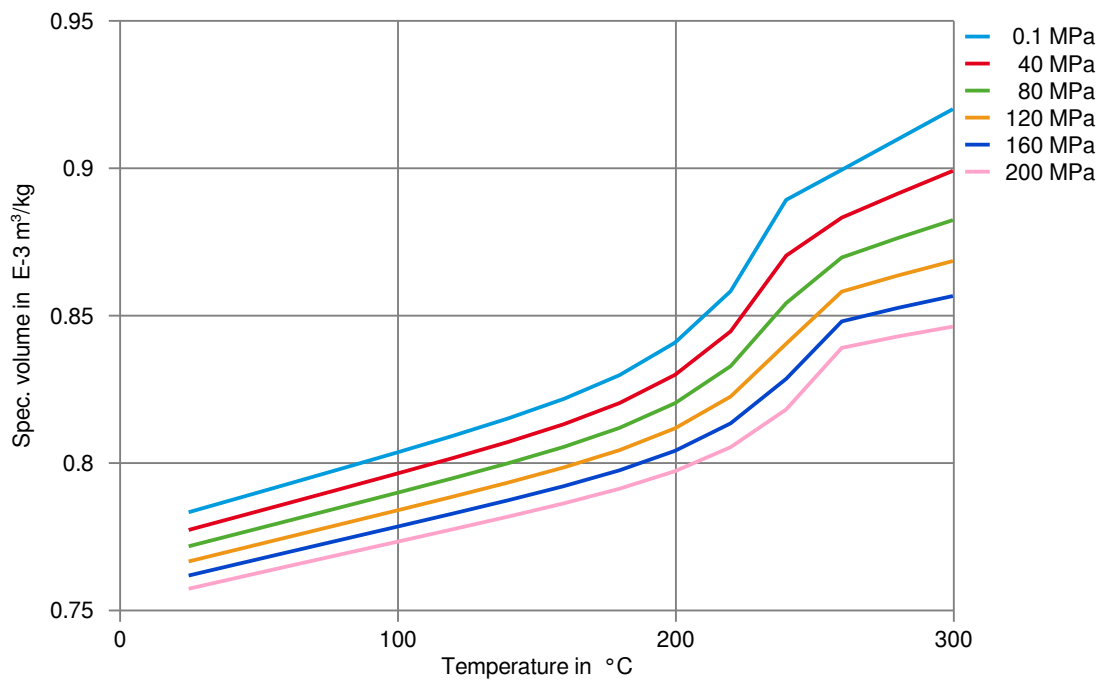
Secant modulus-strain (cond.)



Zytel® BM73G15THS BK317

NYLON RESIN

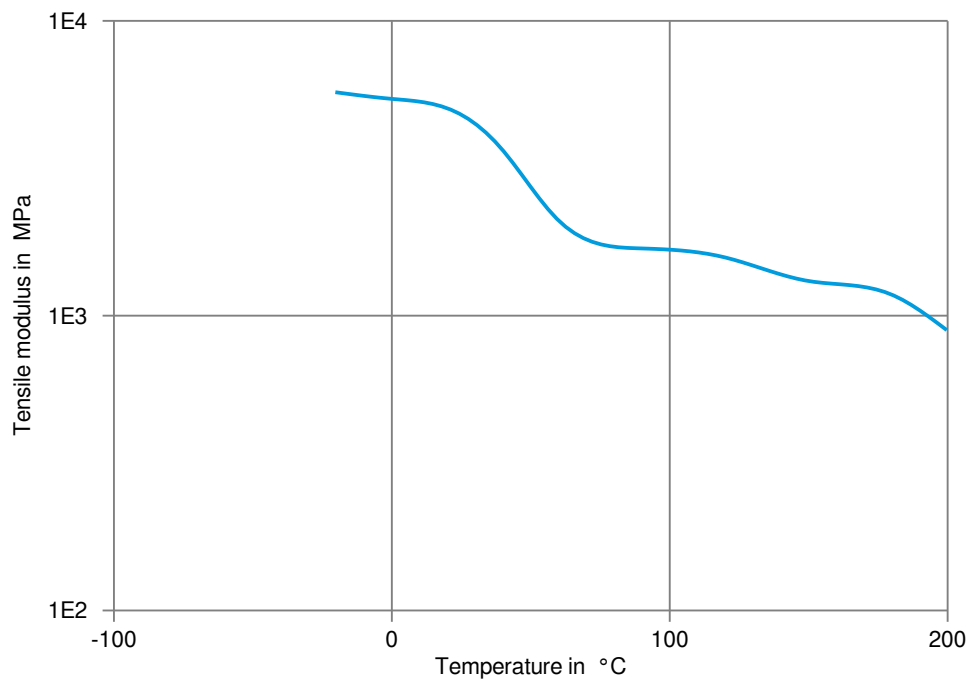
Specific volume-temperature (pvT)



Zytel® BM73G15THS BK317

NYLON RESIN

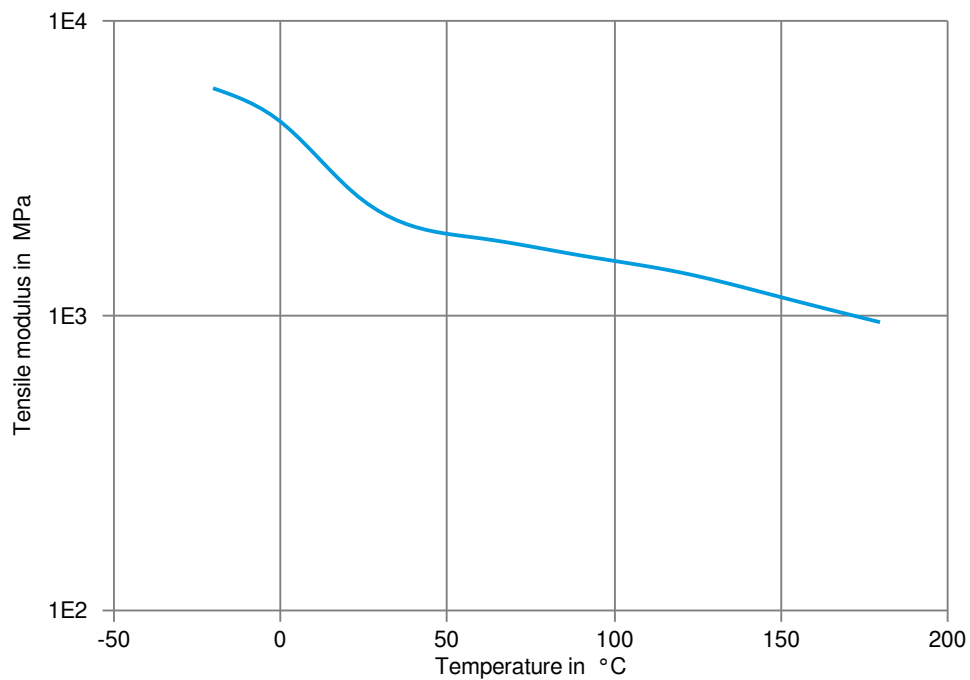
Tensile modulus-temperature (dry)



Zytel® BM73G15THS BK317

NYLON RESIN

Tensile modulus-temperature (cond.)



Zytel® BM73G15THS BK317

NYLON RESIN

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



Zytel® BM73G15THS BK317

NYLON RESIN

- ✓ 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
- ✓ 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).

