Celanese
The chemistry inside innovation™

Zytel® 101L BKB080

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® 101L BKB080 is a lubricated polyamide 66 resin for injection molding.

Product information

Resin Identification	PA66	ISO 1043
Part Marking Code	>PA66<	ISO 11469
ISO designation	ISO 16396-PA66,,M1CG1R,S14-030	

Rheological properties

	dry/cond.		
Viscosity number	145 / *	cm^3/g	ISO 307, 1628

Typical mechanical properties

	dry/cond.		
Tensile modulus	3100 / 1400	MPa	ISO 527-1/-2
Tensile stress at yield, 50mm/min	82 / 55	MPa	ISO 527-1/-2
Tensile strain at yield, 50mm/min	4.3 / 25	%	ISO 527-1/-2
Nominal strain at break	25 / >50	%	ISO 527-1/-2
Tensile strain at break, 50mm/min	45 / -	%	ISO 527-1/-2
Flexural modulus	2800 / -	MPa	ISO 178
Flexural strength	90 / 54	MPa	ISO 178
Charpy impact strength, 23°C	N / -	kJ/m^2	ISO 179/1eU
Charpy notched impact strength, 23°C	5.1 / -	kJ/m^2	ISO 179/1eA
Charpy notched impact strength, -30°C	4.6 / 3	kJ/m^2	ISO 179/1eA
Izod notched impact strength, 23°C	5.5 / -	kJ/m^2	ISO 180/1A
Izod notched impact strength, -40°C	4.0 / 4.0	kJ/m^2	ISO 180/1A
Izod impact strength, 23°C	N / -	kJ/m^2	ISO 180/1U
Hardness, Rockwell, M-scale	79 / 59		ISO 2039-2
Hardness, Rockwell, R-scale	121 / 108		ISO 2039-2
Ball indentation hardness, H 358/30	- / 85[DS]	MPa	ISO 2039-1
Ball indentation hardness, H 961/30	180 / -	MPa	ISO 2039-1
Poisson's ratio	0.37 / 0.43		

[DS]: Derived from similar grade

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Thermal properties

	dry/cond.		
Melting temperature, 10 °C/min	262 / *	°C	ISO 11357-1/-3
Glass transition temperature, 10 °C/min	70 / 40	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	70 / *	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	190 / *	°C	ISO 75-1/-2
Thermal conductivity, flow	0.24	W/(m K)	ISO 22007-2
Specific heat capacity solid	1680	J/(kg K)	ISO 22007-4
RTI, electrical, 0.75mm	130	°C	UL 746B
RTI, electrical, 1.5mm	130	°C	UL 746B
RTI, electrical, 3.0mm	130	°C	UL 746B
RTI, electrical, 6mm	130	°C	UL 746B
RTI, impact, 0.75mm	75	°C	UL 746B
RTI, impact, 1.5mm	75	°C	UL 746B
RTI, impact, 3.0mm	75	°C	UL 746B
RTI, impact, 6mm	75	°C	UL 746B
RTI, strength, 0.75mm	85	°C	UL 746B
RTI, strength, 1.5mm	85 / *	°C	UL 746B
RTI, strength, 3.0mm	85	°C	UL 746B
RTI, strength, 6mm	85	°C	UL 746B

Flammability

	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	V-2 / *	class	IEC 60695-11-10
Thickness tested	1.5 / *	mm	IEC 60695-11-10
UL recognition	yes / *		UL 94
Burning Behav. at thickness h	V-2 / *	class	IEC 60695-11-10
Thickness tested	0.71 / *	mm	IEC 60695-11-10
UL recognition	yes[1] / *		UL 94
Glow Wire Flammability Index, 0.75mm	960 / -	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm	960 / -	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	960 / -	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	725 / -	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 1.5mm	750 / -	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 3.0mm	800 / -	°C	IEC 60695-2-13
Glow Wire Temperature, No Flame, 1mm	805 / -	°C	IEC 60335-1
Glow Wire Temperature, No Flame, 1.5mm	775 / -	°C	IEC 60335-1
Glow Wire Temperature, No Flame, 2mm	700 / -	°C	IEC 60335-1
FMVSS Class	DNI		ISO 3795 (FMVSS 302)

[1]: UL yellow card (f1)

Electrical properties

	dry/cond.		
Comparative tracking index M	475 / -		IEC 60112

Physical/Other properties

	dry/cond.		
Water absorption, Immersion 24h	1.2[2] / *	%	Sim. to ISO 62
Density	1140 / -	kg/m³	ISO 1183

[2]: 3mm thickness

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VDA Properties

	dry/cond.		
Emission of organic compounds	38	µgC/g	VDA 277
Odour	3	class	VDA 270
Fogging, F-value (refraction)	99 / *	%	ISO 6452
Fogging, G-value (condensate)	0.1 / *	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	290	°C
Min. melt temperature	280	°C
Max. melt temperature	300	°C
Screw tangential speed	≤0.4	m/s
Mold Temperature Optimum	70	°C
Min. mould temperature	50	°C
Max. mould temperature	90	°C
Hold pressure range	50 - 100	MPa
Hold pressure time	4	s/mm
Ejection temperature	190	°C

Extrusion

Drying Temperature	≤80	°C
Drying Time, Dehumidified Dryer	4 - 6	h
Melt Temperature Optimum	285	°C
Melt Temperature Range	275 - 290	°C

Characteristics

Processing	Injection Moulding

Automotive

OEM	STANDARD	ADDITIONAL INFORMATION
BMW	GS93016-PA66	
Hyundai	MS211-37 Type D	
Hyundai	MS211-46 Type E	
Stellantis	B62 0300 / 61/212E/210M	01378_22_03585;61/212E/210M
Stellantis	MS.50017 / PA66.2800F.5I	CPN1948
Stellantis - Chrysler	MS.50017 / CPN-1948	Black

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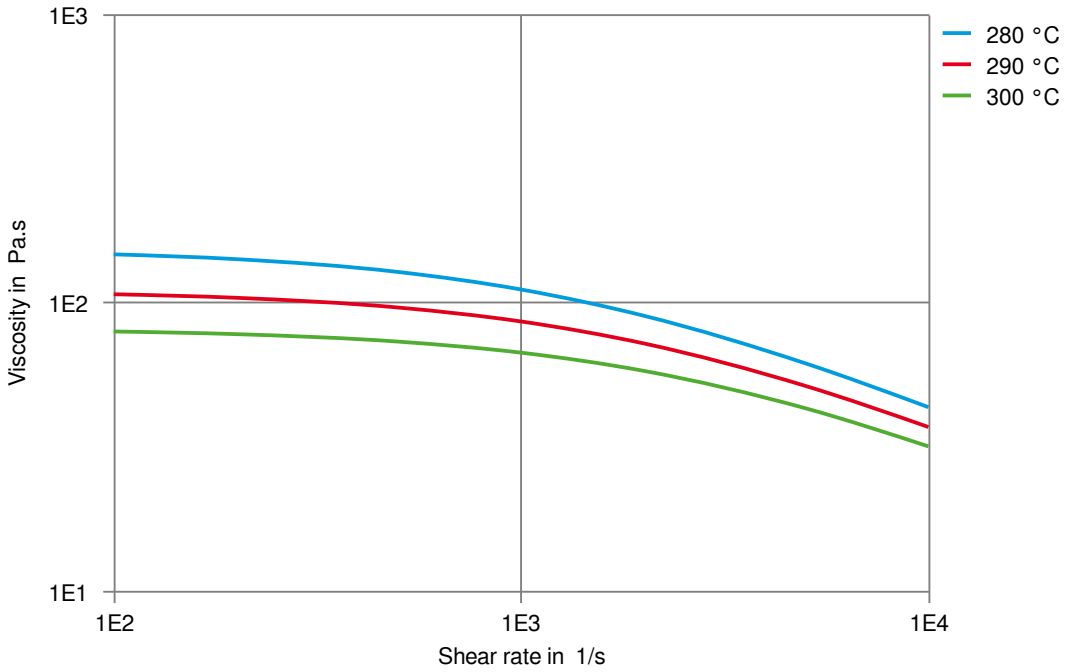
Viscosity-shear rate
(measured on Zytel® 101L NC010)



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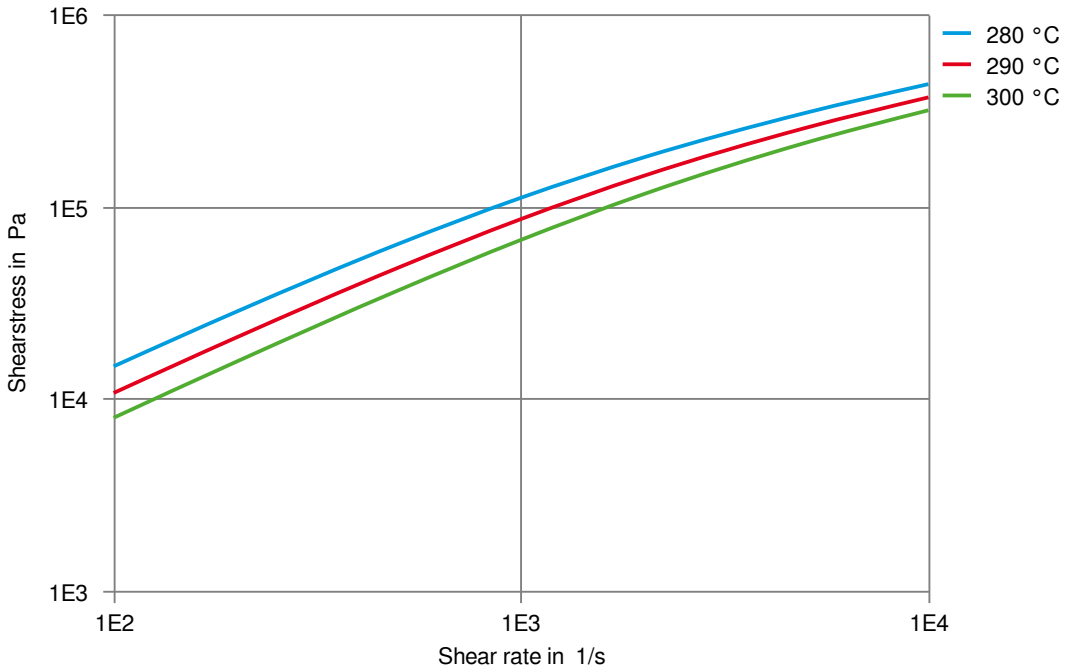
NYLON RESIN

Shearstress-shear rate
(measured on Zytel® 101L NC010)



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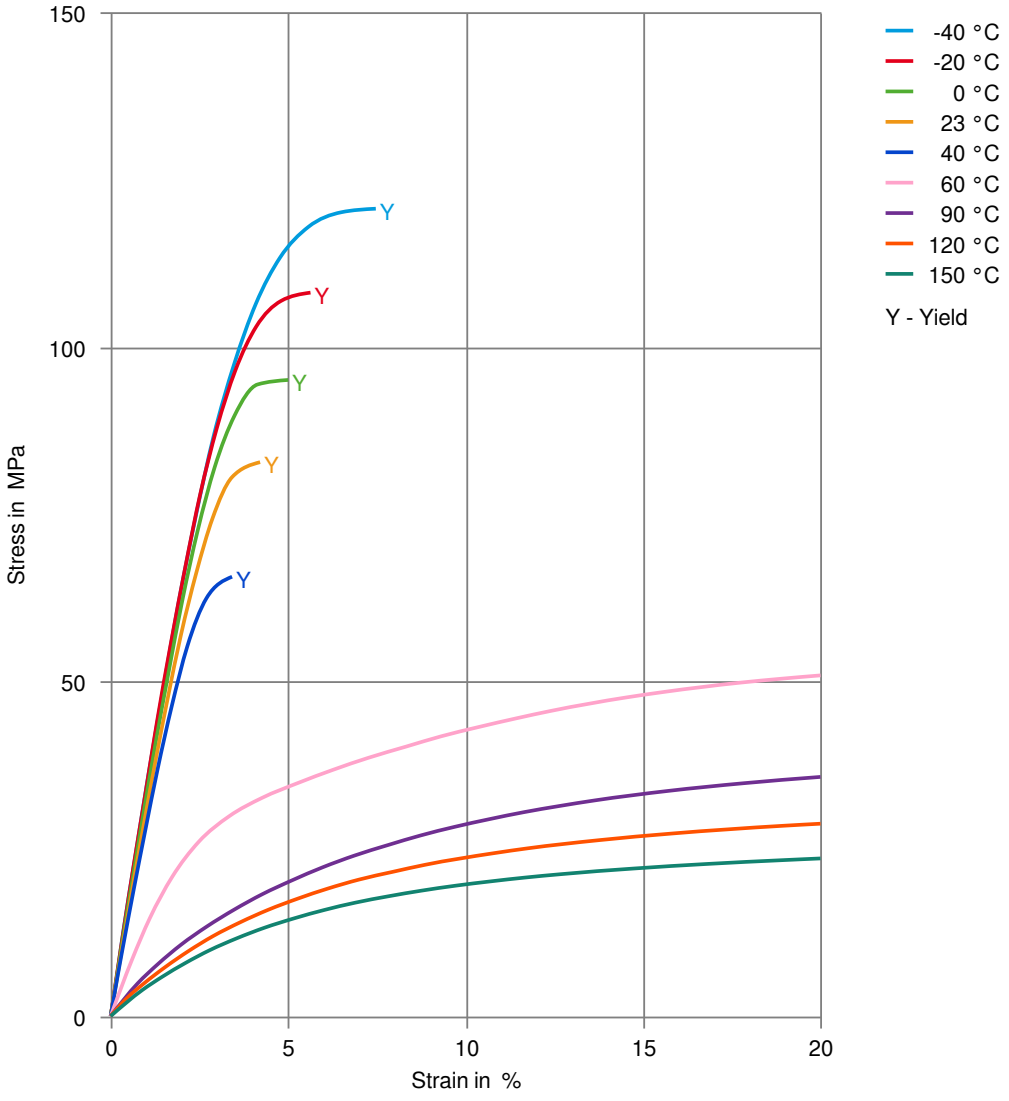
NYLON RESIN

Stress-strain (dry)
(measured on Zytel® 101L NC010)



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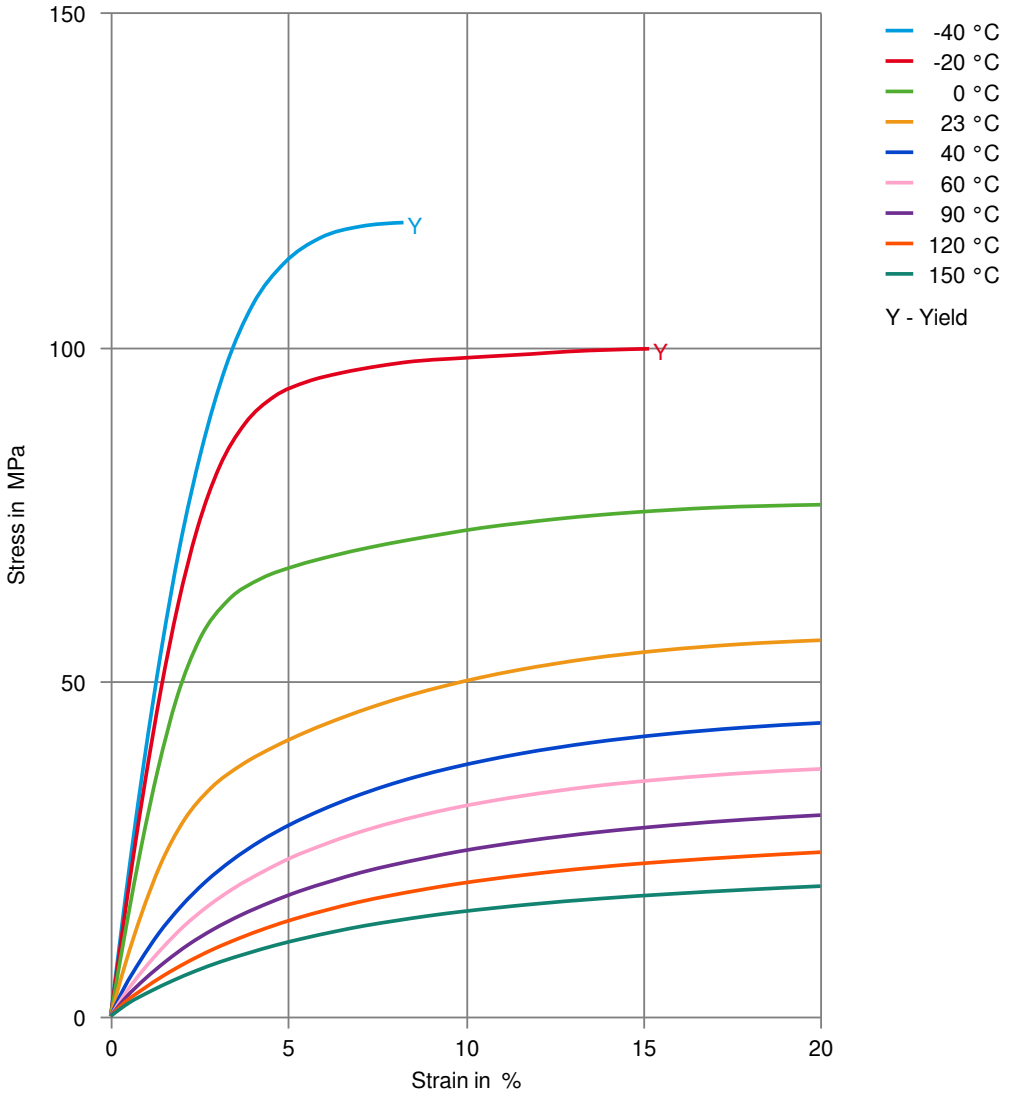
NYLON RESIN

Stress-strain (cond.)
(measured on Zytel® 101L NC010)



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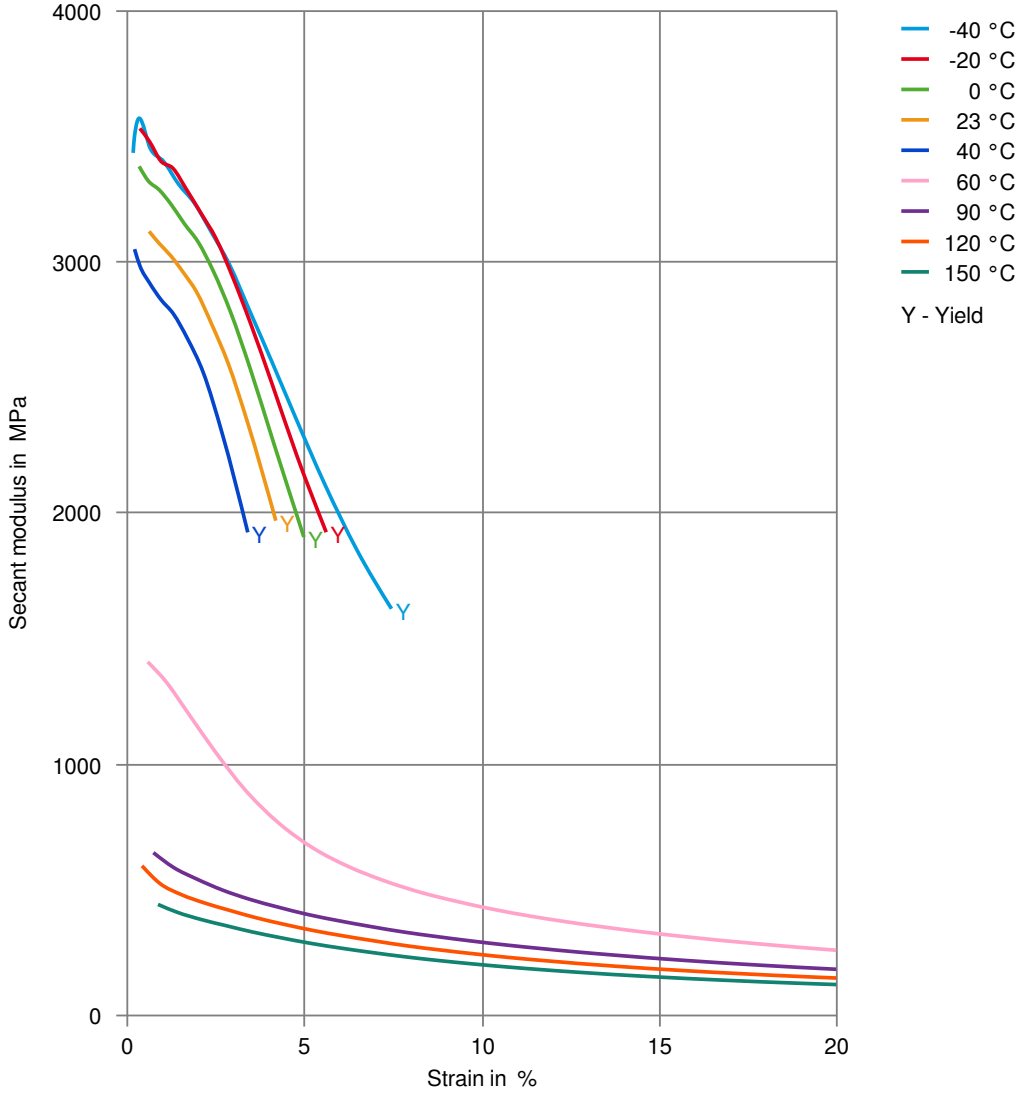
NYLON RESIN

Secant modulus-strain (dry)
(measured on Zytel® 101L NC010)



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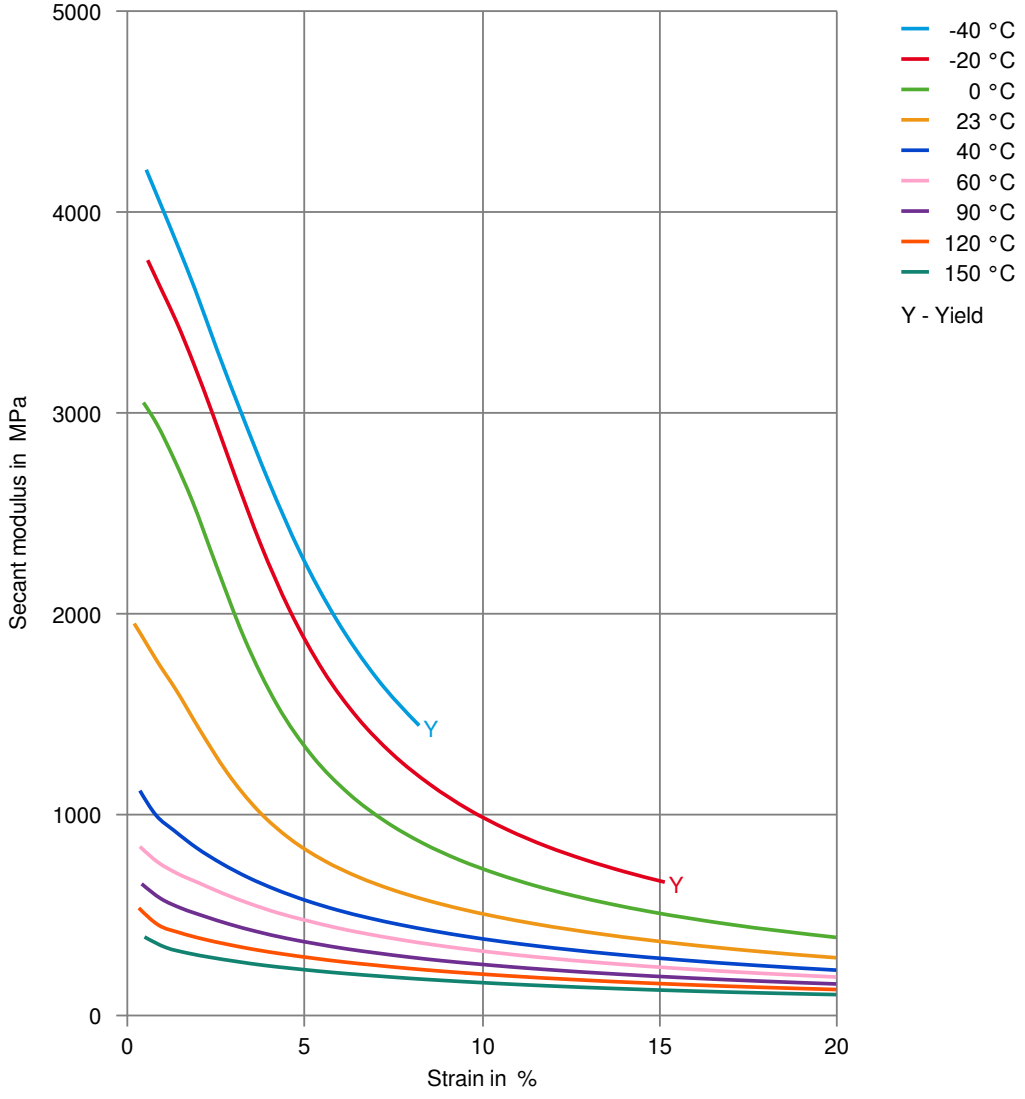
NYLON RESIN

Secant modulus-strain (cond.)
(measured on Zytel® 101L NC010)



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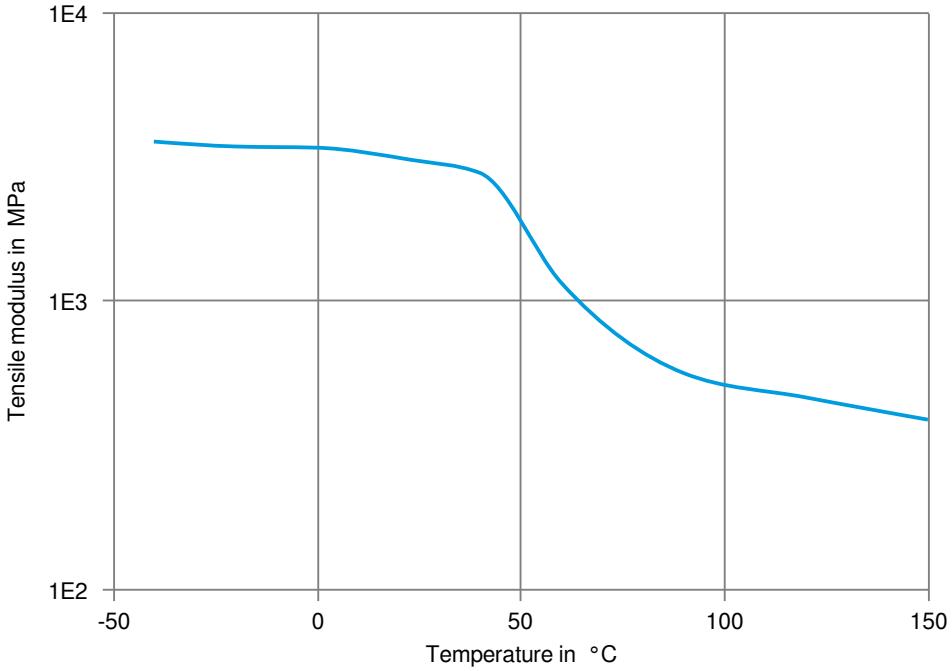
Tensile modulus-temperature (dry)
(measured on Zytel® 101L NC010)



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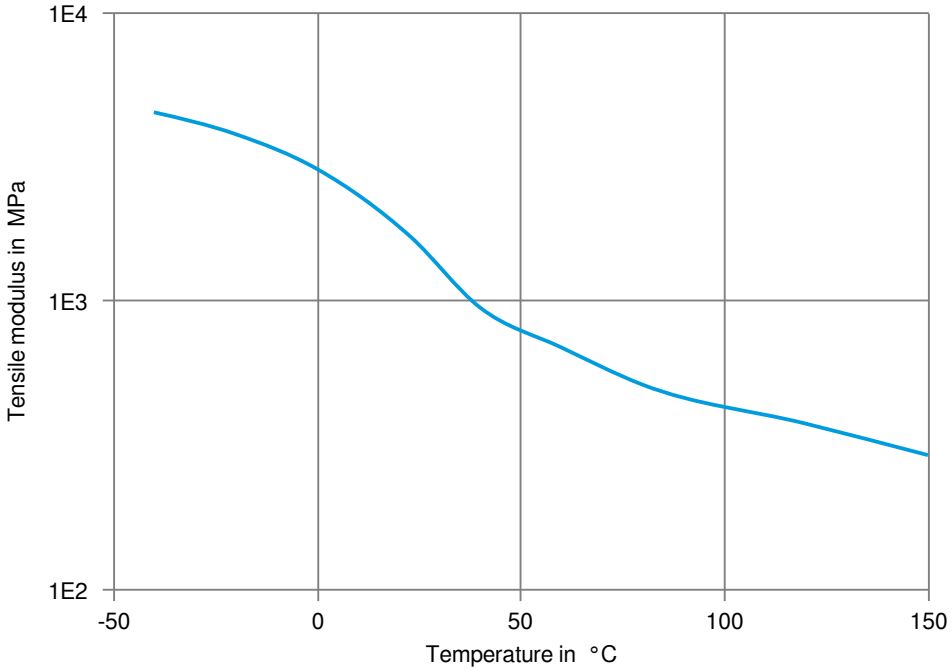
NYLON RESIN

Tensile modulus-temperature (cond.)
(measured on Zytel® 101L NC010)



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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

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

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

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- ✔ 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).