

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® 7335F NC010 is a nucleated, lubricated polyamide 6 resin for injection moulding.

### Product information

Resin Identification	art Marking Code >PA6<		ISO 1043
ISO designation			ISO 11469
Rheological properties	dry/cond.		
	· · · · · · · · · · · · · · · · · · ·	0.4	
Viscosity number	150 <sup>[1]</sup> /*	cm <sup>3</sup> /g	ISO 307, 1628
Moulding shrinkage, parallel	0.6/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.8/-	%	ISO 294-4, 2577
[1]: Sulfuric acid 96%			
Typical mechanical properties	dry/cond.		
Tensile modulus	3600/1400	MPa	ISO 527-1/-2
Tensile stress at yield, 50mm/min	92/55	MPa	ISO 527-1/-2
Tensile strain at yield, 50mm/min	3.8/24	%	ISO 527-1/-2
Nominal strain at break	9/>50	%	ISO 527-1/-2
Tensile strain at break, 50mm/min	15/>50	%	ISO 527-1/-2
Flexural modulus	3100/1100	MPa	ISO 178
Charpy impact strength, 23°C	70/120	kJ/m²	ISO 179/1eU
Charpy impact strength, -30 °C	110/60	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	3.2/18	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	2.5/3	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	3.5/- <sup>[A]</sup>	kJ/m²	ISO 180/1A
Izod notched impact strength, -30°C	2.0/- <sup>[A]</sup>	kJ/m²	ISO 180/1A
Izod notched impact strength, -40°C	2.0/- <sup>[A]</sup>	kJ/m²	ISO 180/1A
Hardness, Rockwell, R-scale	-/85		ISO 2039-2
Poisson's ratio	0.36/0.43		
[A]: Assessed			

[A]: Assessed



## Zytel<sup>®</sup> 7335F NC010

NYLON RESIN

Thermal properties	dry/cond.		
Melting temperature, 10°C/min	221/*	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	60/15	°Č	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	65/*	°Č	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	175/*	°Č	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	200/*	°C	ISO 306
Coefficient of linear thermal expansion	76/*	E-6/K	ISO 11359-1/-2
(CLTE), parallel	707	L-0/1	130 11333-1/-2
Coefficient of linear thermal expansion (CLTE),	92/*	E-6/K	ISO 11359-1/-2
normal	527	L-0/1	130 11339-17-2
Thermal conductivity of melt	0.16	W/(mK)	ISO 22007-2
Specific heat capacity of melt	2700	J/(kg K)	ISO 22007-2
Temperature index, tensile strength, 20 000h	70/*	°C	IEC 60216-1
Temperature index, tensile strength, 20 000h	85/*	°C	IEC 60216-1
remperature muex, tensile strength, 5000h	007	U	IEC 00210-1
Flammability	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	HB/*	class	IEC 60695-11-10
Thickness tested	1.5/*	mm	IEC 60695-11-10
UL recognition	yes/*		UL 94
Glow Wire Flammability Index, 1.0mm	850/-	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	800/-	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	725/-	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 0.4mm	725/-	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 1.0mm	725/-	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 1.5mm	725/-	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 2.0mm	725/-	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 3.0mm	725/-	°C	IEC 60695-2-13
Glow Wire Temperature, No Flame, 0.75mm	700/-	°Č	IEC 60335-1
Glow Wire Temperature, No Flame, 1mm	700/-	°C	IEC 60335-1
Glow Wire Temperature, No Flame, 1.5mm	700/-	°Č	IEC 60335-1
Glow Wire Temperature, No Flame, 2mm	700/-	°Č	IEC 60335-1
Glow Wire Temperature, No Flame, 3mm	700/-	°Č	IEC 60335-1
FMVSS Class	SE	U	ISO 3795 (FMVSS 302)
	0L		
Electrical properties	dry/cond.		
Relative permittivity, 100Hz	4.2/-		IEC 62631-2-1
Dissipation factor, 100Hz	300/-	E-4	IEC 62631-2-1
Volume resistivity	>1E13/1E9	Ohm.m	IEC 62631-3-1
Surface resistivity	*/1E11	Ohm	IEC 62631-3-2
Electric strength	30/-	kV/mm	IEC 60243-1
Comparative tracking index	600/-		IEC 60112
Physical/Other properties	dry/cond.		
Humidity absorption, 2mm	3/*	%	Sim. to ISO 62
Water absorption, 2mm	9.5/*	%	Sim. to ISO 62
Water absorption, Immersion 24h	1.8 <sup>[2]</sup> /*	%	Sim. to ISO 62
Density	1130/-	kg/m <sup>3</sup>	ISO 1183
Density of melt	970	kg/m <sup>3</sup>	
Denoty of mole	570		

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ISO 527-3

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[2]: 3.2mm wall thickness

Film Properties	dry/cond.	
Strain at yield, parallel	4/*	%
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
Min. melt temperature	260	°C
Max. melt temperature	280	°C
Screw tangential speed	≤0.2	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

### Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Release agent

### Additional information

## POSTPROCESSING

Annealing : 30min at 170°C

## Automotive

OEM
Hyundai
Stellantis - Chrysler

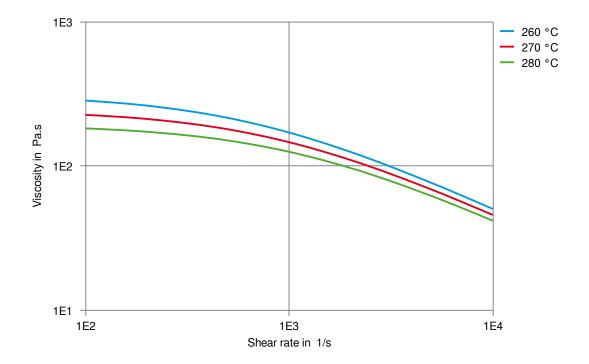
STANDARD MS211-44 Type C MS.50017 / CPN-5448 ADDITIONAL INFORMATION

Natural





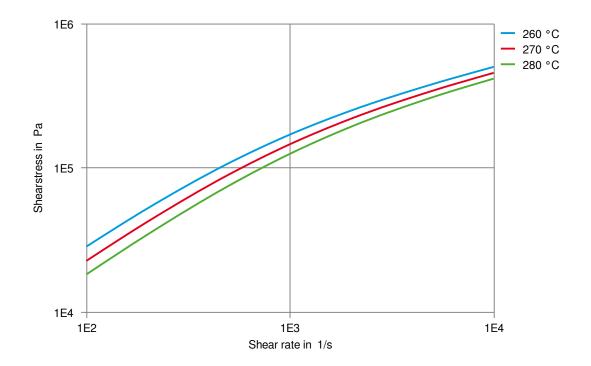
Viscosity-shear rate







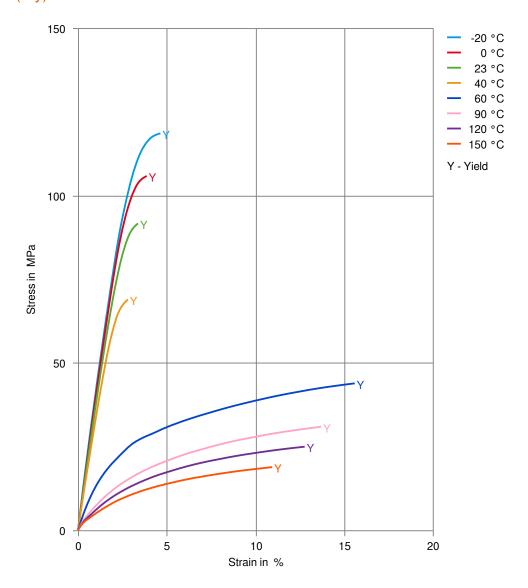
Shearstress-shear rate







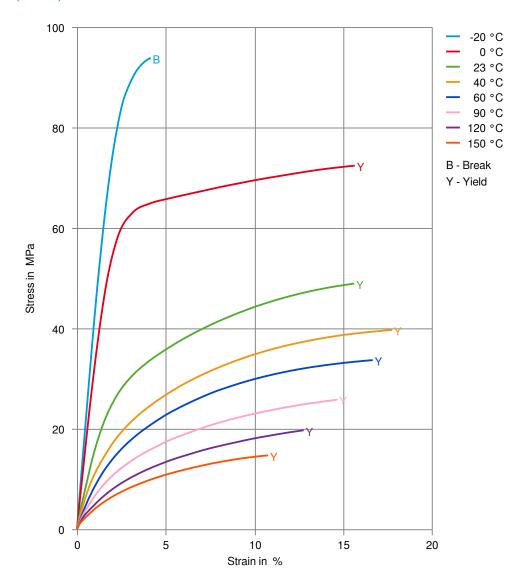
Stress-strain (dry)







Stress-strain (cond.)

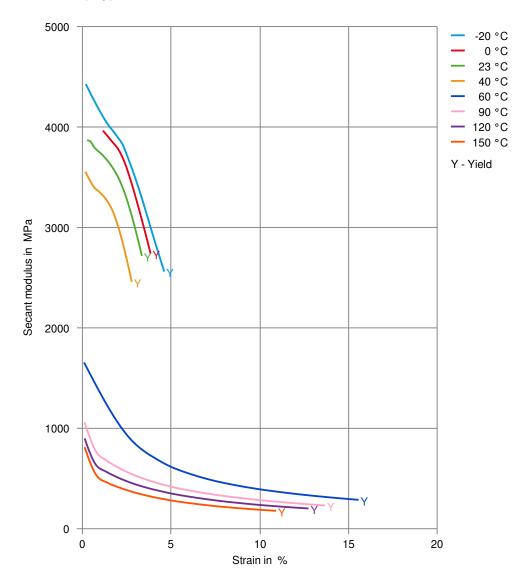






## NYLON RESIN

### Secant modulus-strain (dry)

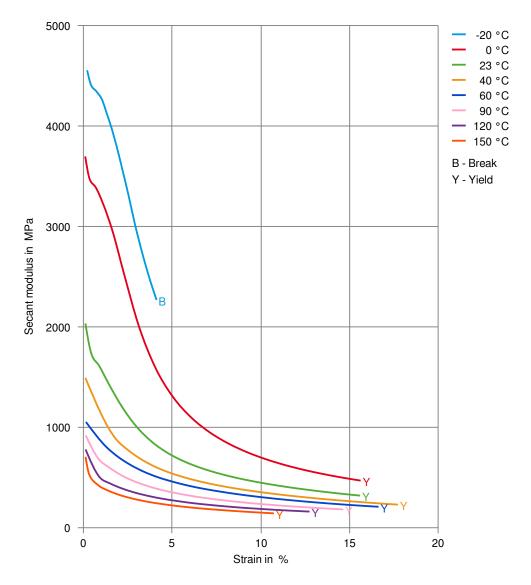






## NYLON RESIN

### Secant modulus-strain (cond.)

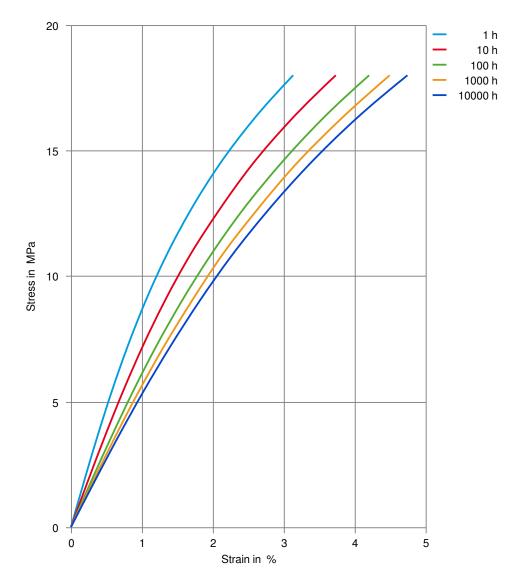






## NYLON RESIN

## Stress-strain (isochronous) 23°C (cond.)

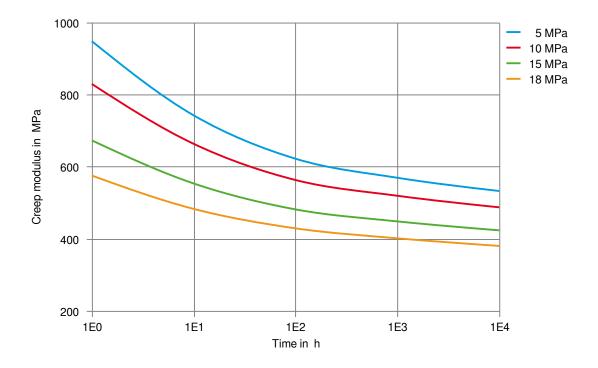






## NYLON RESIN

Creep modulus-time 23°C (cond.)

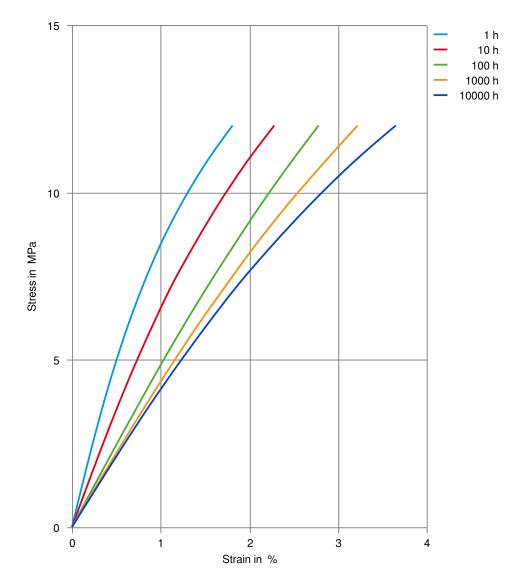






## NYLON RESIN

## Stress-strain (isochronous) 60°C (cond.)

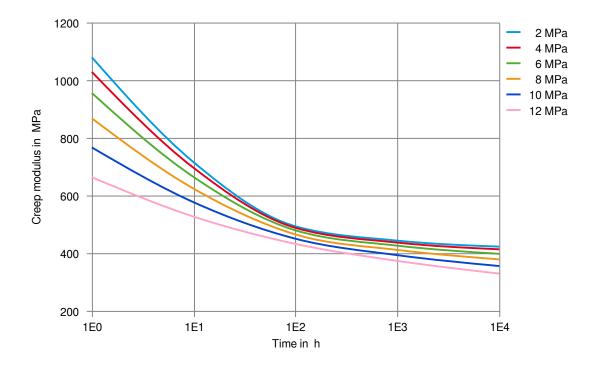






## NYLON RESIN

Creep modulus-time 60°C (cond.)



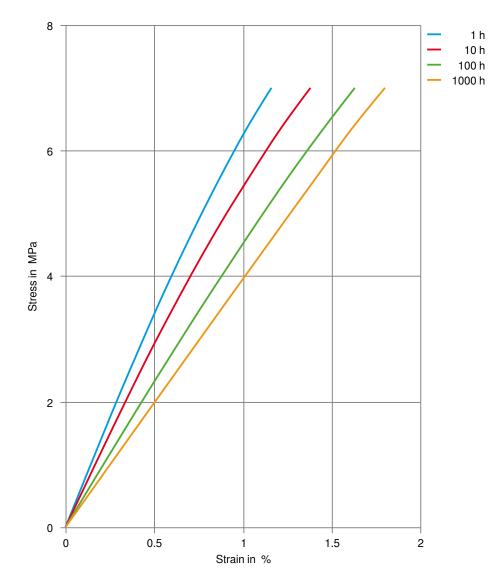




## Zytel® 7335F NC010

## NYLON RESIN

## Stress-strain (isochronous) 90°C (cond.)

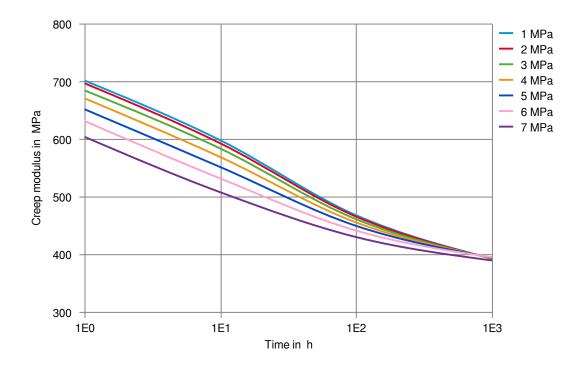






## NYLON RESIN

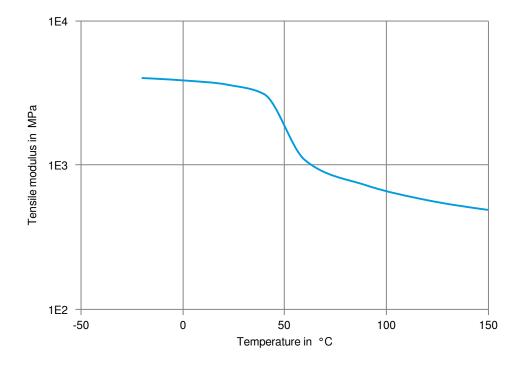
Creep modulus-time 90°C (cond.)







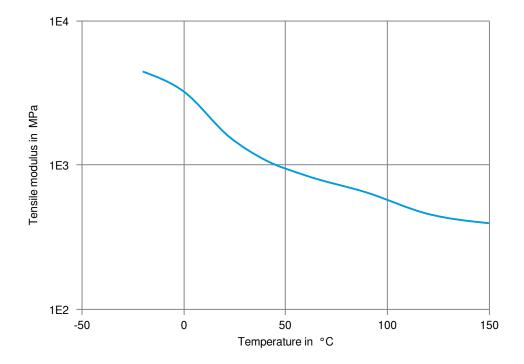
Tensile modulus-temperature (dry)





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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
- X Nitric Acid (40% by mass), 23°C
- X Sulfuric Acid (38% by mass), 23 °C
- X 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
- X SAE 10W40 multigrade motor oil, 130°C
- X 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
- X 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
- X Zinc Chloride solution (50% by mass), 23°C

### Other

- Ethyl Acetate, 23°C
- X Hydrogen peroxide, 23°C
- X 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).

X 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).

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