



### **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® 101 NC010 is a general purpose polyamide 66 resin for injection moulding and extrusion.

### **Product information**

Resin Identification	PA66		ISO 1043
Part Marking Code	>PA66<		ISO 11469
ISO designation	ISO 16396-PA66	6,,M1G1N,S14-030	
Discolarization			
Rheological properties	dry/cond.		
Melt mass-flow rate	23/*	g/10min	ISO 1133
Melt mass-flow rate, Temperature	275/*	°C	
Melt mass-flow rate, Load	2.16/*	kg	
Viscosity number	150 <sup>[1]</sup> /*	cm <sup>3</sup> /g	ISO 307, 1628
Moulding shrinkage, parallel	1.4/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.4/-	%	ISO 294-4, 2577
[1]: Sulfuric acid 96%			
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	4.5/25	%	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	2800/1200	MPa	ISO 178
Flexural strength	90/54	MPa	ISO 178
Tensile creep modulus, 1h	*/1200	MPa	ISO 899-1
Tensile creep modulus, 1000h	*/700	MPa	ISO 899-1
Charpy impact strength, 23°C	N/N	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	400/N	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	5.5/15	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	4.5/3	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	5.5/12	kJ/m²	ISO 180/1A
Izod notched impact strength, -30°C	5.5/-	kJ/m²	ISO 180/1A
Izod notched impact strength, -40°C	5.5/-	kJ/m²	ISO 180/1A
Izod impact strength, 23°C	N/N	kJ/m²	ISO 180/1U
Izod impact strength, -30°C	300/-	kJ/m²	ISO 180/1U

Printed: 2025-05-29 Page: 1 of 11





### NYLON RESIN

Hardness, Rockwell, M-scale Hardness, Rockwell, R-scale Ball indentation hardness, H 358/30 Ball indentation hardness, H 961/30 Poisson's ratio Abrasion resistance	79/59 121/108 -/85 180/* 0.37/0.43 6/*	MPa MPa mm³	ISO 2039-2 ISO 2039-2 ISO 2039-1 ISO 2039-1
Tribological properties	dry/cond.		
Coefficient of static friction, against steel Coefficient of sliding friction, 1h against steel	-/0.2 -/0.28		ISO 8295 ASTM 1894
Thermal properties	dry/cond.		
Melting temperature, 10°C/min Glass transition temperature, 10°C/min Temperature of deflection under load, 1.8 MPa Temperature of deflection under load, 0.45 MPa Vicat softening temperature, 50°C/h 50N Coefficient of linear thermal expansion (CLTE), parallel Coefficient of linear thermal expansion (CLTE), normal Thermal conductivity, flow Thermal conductivity of melt Effective thermal diffusivity, flow Specific heat capacity of melt Specific heat capacity solid RTI, electrical, 0.75mm RTI, electrical, 1.5mm RTI, electrical, 3.0mm RTI, impact, 0.75mm RTI, impact, 1.5mm RTI, impact, 3.0mm RTI, impact, 5.0mm RTI, impact, 5.5mm RTI, strength, 0.75mm RTI, strength, 0.75mm RTI, strength, 3.0mm RTI, strength, 3.0mm RTI, strength, 6mm	262/* 65/40 70/* 190/* 240/* 100/* 110/*  110/*  0.24 0.16 9E-8 2790 1680 130 130 130 130 75 75 75 75 75 85 85 85/* 85 85/*	°C °C °C °C °C °C E-6/K  E-6/K  W/(m K)  W/(m K)  M²/s  J/(kg K)  J/(kg K)  °C °C °C °C °C °C °C °C	ISO 11357-1/-3 ISO 75-1/-2 ISO 75-1/-2 ISO 75-1/-2 ISO 306 ISO 11359-1/-2 ISO 22007-2 ISO 22007-2 ISO 22007-4 ISO 22007-4 ISO 22007-4 UL 746B
Flammability	dry/cond.		
Burning Behav. at 1.5mm nom. thickn. Thickness tested UL recognition Burning Behav. at thickness h Thickness tested UL recognition Oxygen index Glow Wire Flammability Index, 0.75mm	V-2/* 1.5/* yes/* V-2/* 0.71/* yes/* 28/* 960/-	class mm class mm % °C	IEC 60695-11-10 IEC 60695-11-10 UL 94 IEC 60695-11-10 IEC 60695-11-10 UL 94 ISO 4589-1/-2 IEC 60695-2-12

Printed: 2025-05-29 Page: 2 of 11





### NYLON RESIN

Glow Wire Flammability Index, 1.5mm Glow Wire Flammability Index, 3.0mm Glow Wire Ignition Temperature, 0.75mm Glow Wire Ignition Temperature, 1.5mm Glow Wire Ignition Temperature, 3.0mm Glow Wire Temperature, No Flame, 1mm Glow Wire Temperature, No Flame, 1.5mm Glow Wire Temperature, No Flame, 2mm FMVSS Class	960/- 960/- 725/- 750/- 800/- 805/- 775/- 700/- DNI	°C °C °C °C °C °C	IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-13 IEC 60695-2-13 IEC 60695-2-13 IEC 60335-1 IEC 60335-1 IEC 60335-1 IEC 60335-1
Electrical properties	dry/cond.		
Relative permittivity, 100Hz Relative permittivity, 1MHz Dissipation factor, 100Hz Dissipation factor, 1MHz Volume resistivity Surface resistivity Electric strength Comparative tracking index Comparative tracking index M Dielectric Constant, 1 GHz Dielectric Constant, 23°C, 10 GHz	3.8/6 3.5/4 80/2100 180/750 1E13/1E11 */1E12 32/28 600/- 475/- 3.1/- 3/-	E-4 E-4 Ohm.m Ohm kV/mm	IEC 62631-2-1 IEC 62631-2-1 IEC 62631-2-1 IEC 62631-2-1 IEC 62631-3-1 IEC 62631-3-2 IEC 60243-1 IEC 60112 IEC 60112 ASTM D 2520 B ASTM D 2520 B / IPC- TM-650
Physical/Other properties	dry/cond.		
Humidity absorption, 2mm Water absorption, 2mm Water absorption, Immersion 24h Density Density of melt	2.6/* 8.5/* 1.2/* 1140/- 980	% % % kg/m³ kg/m³	Sim. to ISO 62 Sim. to ISO 62 Sim. to ISO 62 ISO 1183
Film Properties	dry/cond.		
Maximum stress, parallel Maximum stress, normal Maximum strain, parallel Maximum strain, normal Gloss, 60° Haze WVTR, 23°C/85%r.h. Oxygen transmission rate, 23°C/0%r.h. Carbon Dioxide transm. rate, 23°C/0%r.h. Thickness of specimen	80/* 75/* 300/* 250/* 90/* 0.02/* 8/* 12/* 45/* 0.1/*	MPa MPa % % % g/(m²*d) cm³/(m²*d*bar) cm³/(m²*d*bar) mm	ISO 527-3 ISO 527-3 ISO 527-3 ISO 527-3 ISO 2813 ISO 14782 DIS 15106-1/-2 DIS 15105-1/-2 DIS 15105-1/-2

Printed: 2025-05-29 Page: 3 of 11





### **NYLON RESIN**

VDA Properties dry/o	cond.
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Emission of organic compounds	5	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	40	°C
Max. mould temperature	95	°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
Processing Moisture Content	≤0.06	%
Melt Temperature Optimum	285	°C
Melt Temperature Range	275 - 290	°C

### Characteristics

Processing Injection Moulding

Delivery form Pellets

### Additional information

Injection molding POSTPROCESSING

Annealing: 30min at 200°C

### **Automotive**

OEM STANDARD ADDITIONAL INFORMATION

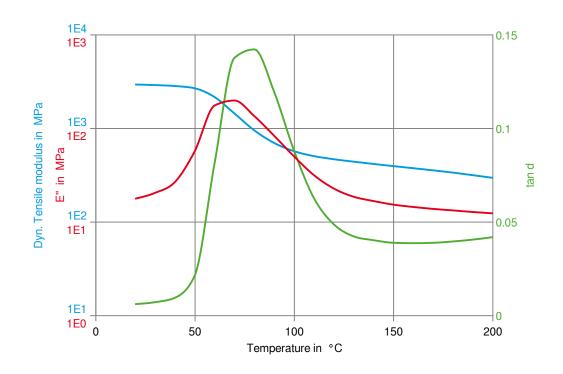
Stellantis - ChryslerMS.50017 / CPN-1938NaturalStellantis - ChryslerMS.50017 / CPN-2012Natural

Printed: 2025-05-29 Page: 4 of 11





Dynamic Tensile modulus-temperature



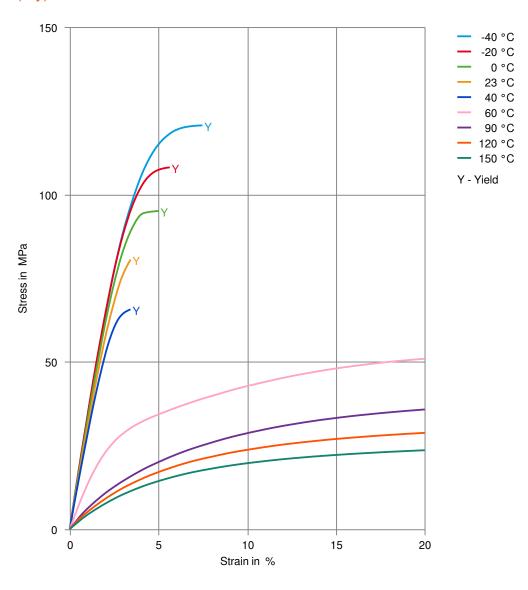
Printed: 2025-05-29 Page: 5 of 11





### **NYLON RESIN**

Stress-strain (dry)



Printed: 2025-05-29 Page: 6 of 11

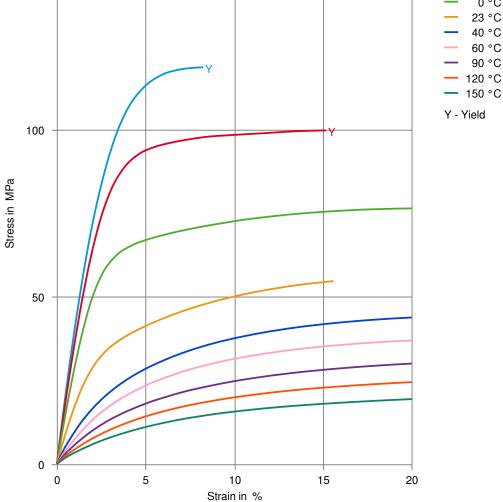




### Zytel® 101 NC010 **NYLON RESIN**

Stress-strain (cond.)





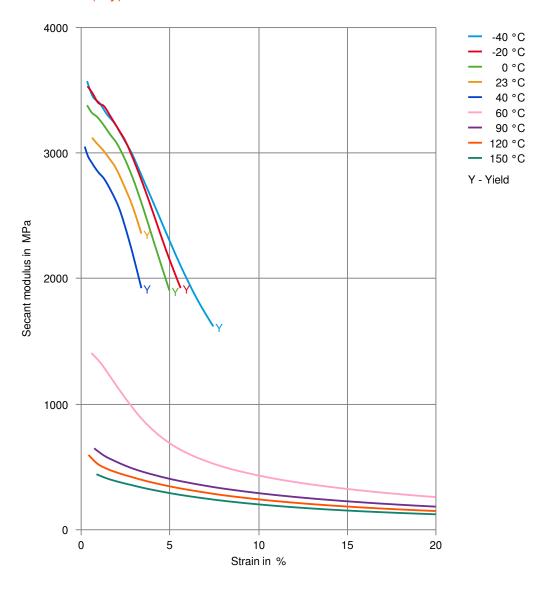
Printed: 2025-05-29 Page: 7 of 11





### **NYLON RESIN**

Secant modulus-strain (dry)



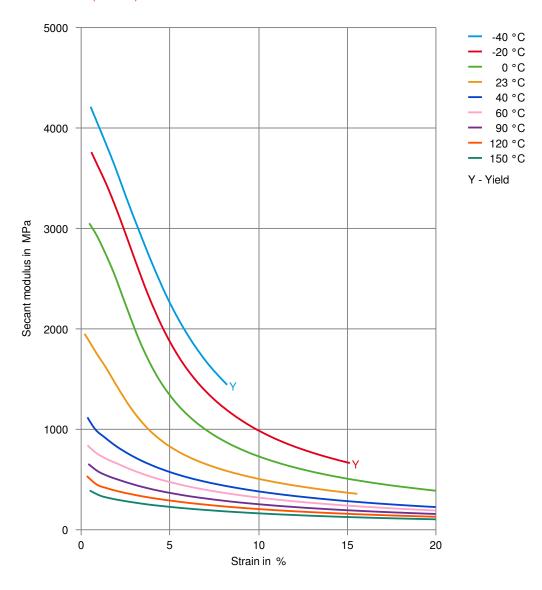
Printed: 2025-05-29 Page: 8 of 11





**NYLON RESIN** 

Secant modulus-strain (cond.)



Printed: 2025-05-29 Page: 9 of 11

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### Zytel® 101 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
- X 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
- X Chromic Acid solution (40% by mass), 23°C

#### Bases

- X 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
- ➤ 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

Printed: 2025-05-29 Page: 10 of 11





### **NYLON RESIN**

- ✓ 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
- X 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).

Printed: 2025-05-29 Page: 11 of 11

Revised: 2025-05-15 Source: Celanese Materials Database

NOTICE TO USERS: Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colourants or other additives may cause significant variations in data values. Properties of moulded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing conditions and environmental exposure. Other than those products expressly identified as medical grade (including by MT® product designation or otherwise), Celanese's products are not intended for use in medical or dental implants. Regardless of any such product designation, any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use. To the best of our knowledge, the information contained in this publication is accurate; however, we do not assume any liability whatsoever for the accuracy and completeness of such information. The information contained in this publication should not be construed as a promise or guarantee of specific properties of our products. It is the sole responsibility of the users to investigate whether any existing patents are infringed by the use of the materials mentioned in this publication. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible adverse effects. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. We recommend that persons intending to rely on any recommendation or to use any e

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