



# **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® 70G13L is a 13% glass fibre reinforced polyamide 66 resin for injection moulding.

## **Product information**

Resin Identification Part Marking Code ISO designation	PA66-GF13 >PA66-GF13< ISO 16396-PA66	ISO 1043 ISO 11469	
Rheological properties	dry/cond.		
Moulding shrinkage, parallel	0.7/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.2/-	%	ISO 294-4, 2577
Typical mechanical properties	dry/cond.		
Tensile modulus	5500/3500	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	120/75	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	3/13	%	ISO 527-1/-2
Flexural modulus	4800/2900	MPa	ISO 178
Flexural stress at 3.5%	165/90	MPa	ISO 178
Tensile creep modulus, 1h	*/3300	MPa	ISO 899-1
Tensile creep modulus, 1000h	*/2200	MPa	ISO 899-1
Charpy impact strength, 23°C	40/70	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	40/30	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	5.4/6	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	4.5/4	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -40°C	4.5/4	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	4.5/4	kJ/m²	ISO 180/1A
Izod notched impact strength, -30°C	4.5/3.0	kJ/m²	ISO 180/1A
Izod notched impact strength, -40°C	4.5/3.0	kJ/m²	ISO 180/1A
Izod impact strength, 23°C	40/55	kJ/m²	ISO 180/1U
Izod impact strength, -30°C	35/28	kJ/m²	ISO 180/1U
Poisson's ratio	0.35/0.37		
Abrasion resistance	10/*	mm <sup>3</sup>	ISO 4649

Printed: 2025-05-29 Page: 1 of 9





# NYLON RESIN

Thermal properties	dry/cond.		
Melting temperature, 10 ° C/min	262/*	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	80/20	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	235/*	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	255/*	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	205/*	°C	ISO 306
Ball pressure test	220/-	°C	IEC 60695-10-2
Coeff. of linear therm. expansion, parallel, -40-23°C	42/*	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion	40/*	E-6/K	ISO 11359-1/-2
(CLTE), parallel	407	L-0/10	100 11000-11-2
Coeff. of linear therm. expansion, parallel, 55-160°C	26/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23°C	77/*	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE),	93/*	E-6/K	ISO 11359-1/-2
normal	937	L-0/1X	130 11339-1/-2
Coeff. of linear therm. expansion, normal, 55-160°C	149/*	E-6/K	ISO 11359-1/-2
•	125	°C	UL 746B
RTI, electrical, 0.75mm	125	°C	
RTI, electrical, 1.5mm		°C	UL 746B
RTI, electrical, 3.0mm	125		UL 746B
RTI, impact, 0.75mm	120	°C	UL 746B
RTI, impact, 1.5mm	120	°C	UL 746B
RTI, impact, 3.0mm	120	°C	UL 746B
RTI, strength, 0.75mm	125	°C	UL 746B
RTI, strength, 1.5mm	125/*	°C	UL 746B
RTI, strength, 3.0mm	125	°C	UL 746B
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
Burning Behav. at thickness h	, HB/*	class	IEC 60695-11-10
Thickness tested	0.71/*	mm	IEC 60695-11-10
UL recognition	yes/*		UL 94
Oxygen index	24/*	%	ISO 4589-1/-2
Glow Wire Flammability Index, 0.75mm	650/-	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm			
· · · · · · · · · · · · · · · · · · ·	650/-	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	650/- 800/-	°C °C	IEC 60695-2-12 IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm Glow Wire Ignition Temperature, 0.75mm	650/- 800/- 675/-	°C	IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-13
Glow Wire Flammability Index, 3.0mm	650/- 800/-	°C °C	IEC 60695-2-12 IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm Glow Wire Ignition Temperature, 0.75mm FMVSS Class Burning rate, Thickness 1 mm	650/- 800/- 675/- B 27	°C °C	IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-13 ISO 3795 (FMVSS 302)
Glow Wire Flammability Index, 3.0mm Glow Wire Ignition Temperature, 0.75mm FMVSS Class Burning rate, Thickness 1 mm  Electrical properties	650/- 800/- 675/- B 27	°C °C	IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-13 ISO 3795 (FMVSS 302) ISO 3795 (FMVSS 302)
Glow Wire Flammability Index, 3.0mm Glow Wire Ignition Temperature, 0.75mm FMVSS Class Burning rate, Thickness 1 mm  Electrical properties Relative permittivity, 100Hz	650/- 800/- 675/- B 27 dry/cond.	°C °C	IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-13 ISO 3795 (FMVSS 302) ISO 3795 (FMVSS 302)
Glow Wire Flammability Index, 3.0mm Glow Wire Ignition Temperature, 0.75mm FMVSS Class Burning rate, Thickness 1 mm  Electrical properties Relative permittivity, 100Hz Relative permittivity, 1MHz	650/- 800/- 675/- B 27 dry/cond. 3.9/- 3.2/-	°C °C °C mm/min	IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-13 ISO 3795 (FMVSS 302) ISO 3795 (FMVSS 302)
Glow Wire Flammability Index, 3.0mm Glow Wire Ignition Temperature, 0.75mm FMVSS Class Burning rate, Thickness 1 mm  Electrical properties Relative permittivity, 100Hz Relative permittivity, 1MHz Dissipation factor, 100Hz	650/- 800/- 675/- B 27 dry/cond. 3.9/- 3.2/- 130/-	°C °C °C mm/min	IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-13 ISO 3795 (FMVSS 302) ISO 3795 (FMVSS 302) IEC 62631-2-1 IEC 62631-2-1 IEC 62631-2-1
Glow Wire Flammability Index, 3.0mm Glow Wire Ignition Temperature, 0.75mm FMVSS Class Burning rate, Thickness 1 mm  Electrical properties Relative permittivity, 100Hz Relative permittivity, 1MHz Dissipation factor, 100Hz Dissipation factor, 1MHz	650/- 800/- 675/- B 27 dry/cond. 3.9/- 3.2/- 130/- 150/-	°C °C °C mm/min	IEC 60695-2-12 IEC 60695-2-13 IEC 60695-2-13 ISO 3795 (FMVSS 302) ISO 3795 (FMVSS 302) IEC 62631-2-1 IEC 62631-2-1 IEC 62631-2-1 IEC 62631-2-1
Glow Wire Flammability Index, 3.0mm Glow Wire Ignition Temperature, 0.75mm FMVSS Class Burning rate, Thickness 1 mm  Electrical properties Relative permittivity, 100Hz Relative permittivity, 1MHz Dissipation factor, 100Hz Dissipation factor, 1MHz Volume resistivity	650/- 800/- 675/- B 27 dry/cond. 3.9/- 3.2/- 130/- 150/- >1E13/-	°C °C °C mm/min E-4 E-4 Ohm.m	IEC 60695-2-12 IEC 60695-2-13 IEC 60695-2-13 ISO 3795 (FMVSS 302) ISO 3795 (FMVSS 302) IEC 62631-2-1 IEC 62631-2-1 IEC 62631-2-1 IEC 62631-2-1 IEC 62631-3-1
Glow Wire Flammability Index, 3.0mm Glow Wire Ignition Temperature, 0.75mm FMVSS Class Burning rate, Thickness 1 mm  Electrical properties Relative permittivity, 100Hz Relative permittivity, 1MHz Dissipation factor, 100Hz Dissipation factor, 1MHz Volume resistivity Surface resistivity	650/- 800/- 675/- B 27  dry/cond. 3.9/- 3.2/- 130/- 150/- >1E13/- */1E15	°C °C °C mm/min  E-4 E-4 Ohm.m Ohm	IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-13 ISO 3795 (FMVSS 302) ISO 3795 (FMVSS 302)  IEC 62631-2-1 IEC 62631-2-1 IEC 62631-2-1 IEC 62631-3-1 IEC 62631-3-1 IEC 62631-3-2
Glow Wire Flammability Index, 3.0mm Glow Wire Ignition Temperature, 0.75mm FMVSS Class Burning rate, Thickness 1 mm  Electrical properties Relative permittivity, 100Hz Relative permittivity, 1MHz Dissipation factor, 100Hz Dissipation factor, 1MHz Volume resistivity	650/- 800/- 675/- B 27 dry/cond. 3.9/- 3.2/- 130/- 150/- >1E13/-	°C °C °C mm/min E-4 E-4 Ohm.m	IEC 60695-2-12 IEC 60695-2-13 IEC 60695-2-13 ISO 3795 (FMVSS 302) ISO 3795 (FMVSS 302) IEC 62631-2-1 IEC 62631-2-1 IEC 62631-2-1 IEC 62631-2-1 IEC 62631-3-1

Printed: 2025-05-29 Page: 2 of 9





# **NYLON RESIN**

Electric Strength, Short Time, 2mm	25/-	kV/mm	IEC 60243-1
------------------------------------	------	-------	-------------

# Physical/Other properties dry/cond.

Humidity absorption, 2mm 2.2/\* Sim. to ISO 62 % 7.6/\* % Sim. to ISO 62 Water absorption, 2mm 1.7<sup>[1]</sup>/\* Water absorption, Immersion 24h % Sim. to ISO 62 Density 1230/kg/m<sup>3</sup> ISO 1183

[1]: 3.2mm wall thickness

## **VDA Properties**

Emission of organic compounds  $6 \mu gC/g$  VDA 277

# Injection

Drying Recommended	yes	
Drying Temperature	80	°C
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	≤0.2	%
Melt Temperature Optimum	300	°C
Min. melt temperature	290	°C
Max. melt temperature	305	°C
Screw tangential speed	≤0.2	m/s
Mold Temperature Optimum	95	°C
Min. mould temperature	65	°C
Max. mould temperature	120	°C
Hold pressure range	50 - 100	MPa
Hold pressure time	3	s/mm
Ejection temperature	224	°C

### Characteristics

Processing Injection Moulding

Delivery form Granules

Additives Release agent

## **Automotive**

OEM STANDARD ADDITIONAL INFORMATION

General Motors

Natural; Special Parts Approval, See Your CE
Account Representative for Further Details.

Hyundai MS941-03 Type A-2

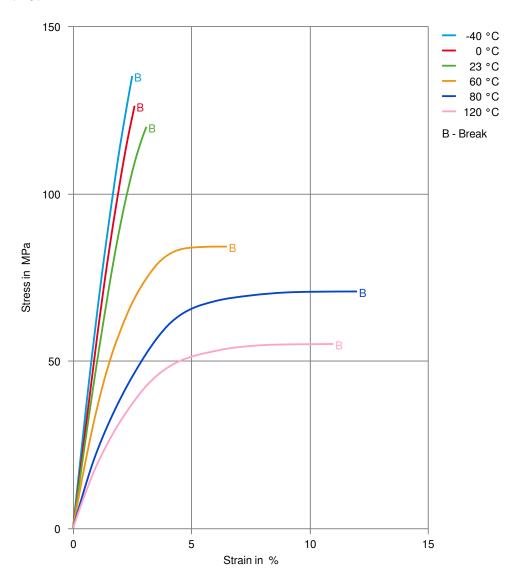
Stellantis - Chrysler MS.50017 / CPN-2306 Natural Stellantis - Chrysler MS.50017 / CPN-2601 Natural

Printed: 2025-05-29 Page: 3 of 9









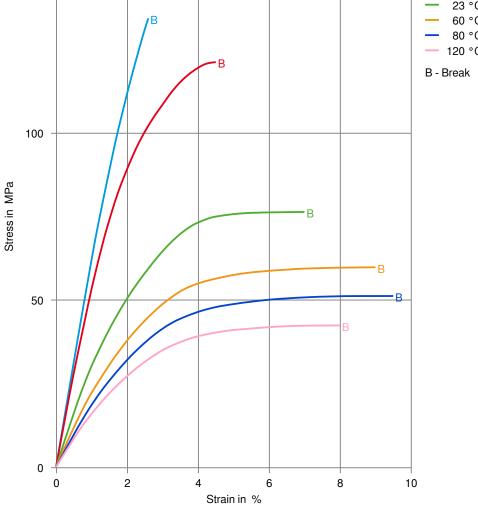
Printed: 2025-05-29 Page: 4 of 9





Stress-strain (cond.)



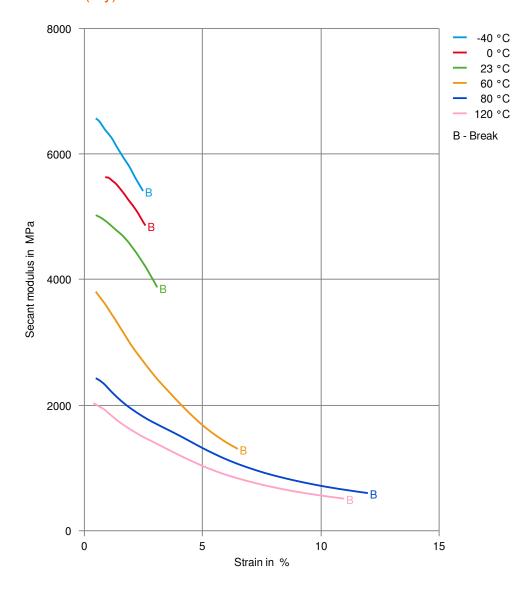


Printed: 2025-05-29 Page: 5 of 9





Secant modulus-strain (dry)

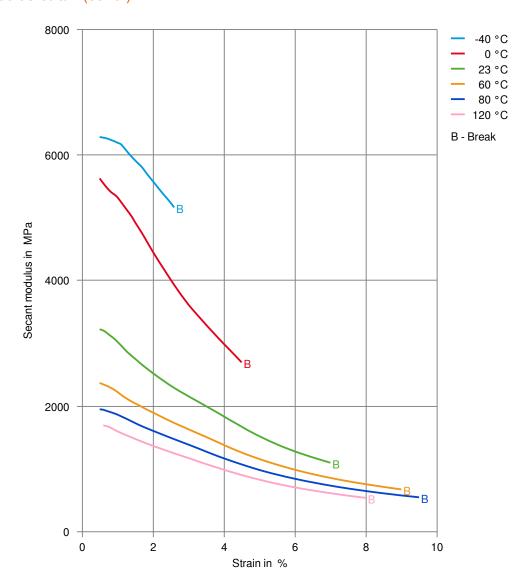


Printed: 2025-05-29 Page: 6 of 9





Secant modulus-strain (cond.)



Printed: 2025-05-29 Page: 7 of 9

(+) 18816996168 Ponciplastics.com



# Zytel® 70G13L NC010

# **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
- 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
- ✓ 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

Printed: 2025-05-29 Page: 8 of 9





# **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
- ✓ 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).

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

Revised: 2025-04-18 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

© 2025 Celanese or its affiliates. All rights reserved. Celanese®, registered C-ball design and all other trademarks identified herein with ®, TM, SM, unless otherwise noted, are trademarks of Celanese or its affiliates. Fortron is a registered trademark of Fortron Industries LLC.