

ISO 1043

## Zytel® FR95G25V0NH NC010

### **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® FR95G25V0NH NC010 is a 25% glass fibre reinforced, flame retardant polyamide resin for injection moulding. It is halogen and red phosphorous free, has high flow characteristics and .

PA66/6T-GF25FR(40)

#### Product information

Resin Identification

Part Marking Code	>PA66/6T-GF25FR(40)<		ISO 11469
ISO designation	ISO 16396-PA66/6T,GF25 FR(40),M1F1GN,S12-090		
Rheological properties	dry/cond.		
Moulding shrinkage, parallel	0.1/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.6/-	%	ISO 294-4, 2577
Typical mechanical properties	dry/cond.		
Tensile Modulus	9000/8500	MPa	ISO 527-1/-2
Stress at break, 5mm/min	110/90	MPa	ISO 527-1/-2
Strain at break, 5mm/min	2.2/2.2	%	ISO 527-1/-2
Flexural Modulus	8500/8000	MPa	ISO 178
Flexural Strength	190/170	MPa	ISO 178
Charpy impact strength, 23°C	35/31	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	4.6/-	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	4.5/-	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -40°C	4.5/-	kJ/m²	ISO 179/1eA
Poisson's ratio	0.34/0.34		

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## NYLON RESIN

Thermal properties	dry/cond.		
Melting temperature, 10°C/min	267/*	°C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	210/*	°C	ISO 75-1/-2
Coeff. of linear therm. expansion, parallel, -40-23°C	25/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel	27/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel, 55-160°C	17/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23°C	57/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	70/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, 55-160°C	130/*	E-6/K	ISO 11359-1/-2
RTI, electrical, 0.4mm	160	°C	UL 746B
RTI, electrical, 0.75mm	160 <sup>[1]</sup>	°C	UL 746B
RTI, electrical, 1.5mm	160	°C	UL 746B
RTI, electrical, 3mm	160	°C	UL 746B
RTI, impact, 0.75mm	155	°C	UL 746B
RTI, impact, 1.5mm	155	°C	UL 746B
RTI, impact, 3mm	155	°C	UL 746B
RTI, strength, 0.75mm	155	°C	UL 746B
RTI, strength, 1.5mm	155/*	°C	UL 746B
RTI, strength, 3mm	155	°C	UL 746B
Temperature index, tensile strength, 20 000h	160/*	°C	IEC 60216-1
Temperature index, tensile strength, 5000h	190/*	°C	IEC 60216-1
[1]: f1			
Flammability	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	V-0/*	class	UL 94
Thickness tested		Class	UL 34
Trickress tested	15/*	mm	
III recognition	1.5/* ves/*	mm	UL 94
UL recognition  Burning Rehav. at thickness h	yes/*		UL 94 UL 94
Burning Behav. at thickness h	yes/* V-0/*	class	UL 94 UL 94 UL 94
Burning Behav. at thickness h Thickness tested	yes/* V-0/* 0.4/*		UL 94 UL 94 UL 94 UL 94
Burning Behav. at thickness h Thickness tested UL recognition	yes/* V-0/* 0.4/* yes <sup>[2]</sup> /*	class mm	UL 94 UL 94 UL 94 UL 94 UL 94
Burning Behav. at thickness h Thickness tested UL recognition Burning Behav. 5V at thickness h	yes/* V-0/* 0.4/* yes <sup>[2]</sup> /* 5VA/*	class mm class	UL 94 UL 94 UL 94 UL 94 UL 94 UL 94
Burning Behav. at thickness h Thickness tested UL recognition Burning Behav. 5V at thickness h Thickness tested	yes/* V-0/* 0.4/* yes <sup>[2]</sup> /* 5VA/* 1.5/*	class mm	UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 UL 94
Burning Behav. at thickness h Thickness tested UL recognition Burning Behav. 5V at thickness h Thickness tested UL recognition	yes/* V-0/* 0.4/* yes <sup>[2]</sup> /* 5VA/* 1.5/* yes/*	class mm class mm	UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 UL 94
Burning Behav. at thickness h Thickness tested UL recognition Burning Behav. 5V at thickness h Thickness tested UL recognition Oxygen index	yes/* V-0/* 0.4/* yes <sup>[2]</sup> /* 5VA/* 1.5/* yes/*	class mm class mm	UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 ISO 4589-1/-2
Burning Behav. at thickness h Thickness tested UL recognition Burning Behav. 5V at thickness h Thickness tested UL recognition Oxygen index Glow Wire Flammability Index, 0.4mm	yes/* V-0/* 0.4/* yes <sup>[2]</sup> /* 5VA/* 1.5/* yes/* 32/*	class mm class mm % °C	UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 ISO 4589-1/-2 IEC 60695-2-12
Burning Behav. at thickness h Thickness tested UL recognition Burning Behav. 5V at thickness h Thickness tested UL recognition Oxygen index Glow Wire Flammability Index, 0.4mm Glow Wire Flammability Index, 0.75mm	yes/* V-0/* 0.4/* yes <sup>[2]</sup> /* 5VA/* 1.5/* yes/* 32/* 960/-	class mm class mm	UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 ISO 4589-1/-2 IEC 60695-2-12
Burning Behav. at thickness h Thickness tested UL recognition Burning Behav. 5V at thickness h Thickness tested UL recognition Oxygen index Glow Wire Flammability Index, 0.4mm Glow Wire Flammability Index, 0.75mm Glow Wire Flammability Index, 1mm	yes/* V-0/* 0.4/* yes <sup>[2]</sup> /* 5VA/* 1.5/* yes/* 32/*	class mm class mm % ° C ° C	UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 ISO 4589-1/-2 IEC 60695-2-12
Burning Behav. at thickness h Thickness tested UL recognition Burning Behav. 5V at thickness h Thickness tested UL recognition Oxygen index Glow Wire Flammability Index, 0.4mm Glow Wire Flammability Index, 0.75mm	yes/* V-0/* 0.4/* yes <sup>[2]</sup> /* 5VA/* 1.5/* yes/* 32/* 960/- 960/-	class mm class mm % °C °C °C	UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 ISO 4589-1/-2 IEC 60695-2-12 IEC 60695-2-12
Burning Behav. at thickness h Thickness tested UL recognition Burning Behav. 5V at thickness h Thickness tested UL recognition Oxygen index Glow Wire Flammability Index, 0.4mm Glow Wire Flammability Index, 0.75mm Glow Wire Flammability Index, 1mm Glow Wire Flammability Index, 2mm	yes/* V-0/* 0.4/* yes <sup>[2]</sup> /* 5VA/* 1.5/* yes/* 32/* 960/- 960/- 960/-	class mm class mm % °C °C °C °C	UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 ISO 4589-1/-2 IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-12
Burning Behav. at thickness h Thickness tested UL recognition Burning Behav. 5V at thickness h Thickness tested UL recognition Oxygen index Glow Wire Flammability Index, 0.4mm Glow Wire Flammability Index, 0.75mm Glow Wire Flammability Index, 1mm Glow Wire Flammability Index, 2mm Glow Wire Flammability Index, 3mm	yes/* V-0/* 0.4/* yes <sup>[2]</sup> /* 5VA/* 1.5/* yes/* 32/* 960/- 960/- 960/-	class mm class mm % °C °C °C °C	UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 ISO 4589-1/-2 IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-12
Burning Behav. at thickness h Thickness tested UL recognition Burning Behav. 5V at thickness h Thickness tested UL recognition Oxygen index Glow Wire Flammability Index, 0.4mm Glow Wire Flammability Index, 0.75mm Glow Wire Flammability Index, 1mm Glow Wire Flammability Index, 2mm Glow Wire Flammability Index, 3mm Glow Wire Ignition Temperature, 0.75mm	yes/* V-0/* 0.4/* yes <sup>[2]</sup> /* 5VA/* 1.5/* yes/* 32/* 960/- 960/- 960/- 960/- 725/-	class mm class mm % °C °C °C °C °C °C	UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 ISO 4589-1/-2 IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-12
Burning Behav. at thickness h Thickness tested UL recognition Burning Behav. 5V at thickness h Thickness tested UL recognition Oxygen index Glow Wire Flammability Index, 0.4mm Glow Wire Flammability Index, 0.75mm Glow Wire Flammability Index, 1mm Glow Wire Flammability Index, 2mm Glow Wire Flammability Index, 3mm Glow Wire Ignition Temperature, 0.75mm Glow Wire Ignition Temperature, 0.4mm	yes/* V-0/* 0.4/* yes <sup>[2]</sup> /* 5VA/* 1.5/* yes/* 32/* 960/- 960/- 960/- 960/- 725/- 700/-	class mm class mm % °C °C °C °C °C °C	UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 ISO 4589-1/-2 IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-13 IEC 60695-2-13
Burning Behav. at thickness h Thickness tested UL recognition Burning Behav. 5V at thickness h Thickness tested UL recognition Oxygen index Glow Wire Flammability Index, 0.4mm Glow Wire Flammability Index, 0.75mm Glow Wire Flammability Index, 1mm Glow Wire Flammability Index, 2mm Glow Wire Flammability Index, 3mm Glow Wire Flammability Index, 3mm Glow Wire Ignition Temperature, 0.75mm Glow Wire Ignition Temperature, 0.4mm Glow Wire Ignition Temperature, 1mm	yes/* V-0/* 0.4/* yes <sup>[2]</sup> /* 5VA/* 1.5/* yes/* 32/* 960/- 960/- 960/- 960/- 725/- 700/- 725/-	class mm class mm % °C °C °C °C °C °C	UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 UL 94 ISO 4589-1/-2 IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-13 IEC 60695-2-13

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ISO 3795 (FMVSS

# Zytel® FR95G25V0NH NC010

## **NYLON RESIN**

**FMVSS Class** 

Railway classification Railway classification rating	R22/- HL2 <sup>[3]</sup> /-		302) EN 45545-2 EN 45545-2
[2]: UL yellow card (f1)			
[3]: also meet R23-HL3 classification			
Electrical properties	dry/cond.		
Volume resistivity	>1E13/8E11	Ohm.m	IEC 62631-3-1
Surface resistivity	*/>1E15	Ohm	IEC 62631-3-2
Electric strength	37/37	kV/mm	IEC 60243-1
Comparative tracking index	600/-		IEC 60112

DNI

dry/cond.

### Other properties

Humidity absorption, 2mm	1.6 <sup>[4]</sup> /*	%	Sim. to ISO 62
Water absorption, 2mm	4/*	%	Sim. to ISO 62
Density	1400/-	kg/m³	ISO 1183
[4]: 4mm wall thickness			

### Injection

Drying Recommended	yes		
Drying Temperature	80	°C	
Drying Time, Dehumidified Dryer	2 - 4		
Processing Moisture Content	≤0.1 <sup>[5]</sup>	%	
Melt Temperature Optimum	280	°C	Internal
Min. melt temperature	270	°C	
Max. melt temperature	290	°C	
Screw tangential speed	≤0.2	m/s	
Mold Temperature Optimum	100	°C	
Min. mould temperature	80	°C	
Max. mould temperature	120	°C	
Hold pressure range	50 - 100	MPa	
Hold pressure time	2.5	s/mm	
Ejection temperature	210	°C	Internal
[5]: flame retardant grade below 0.1%			

#### Characteristics

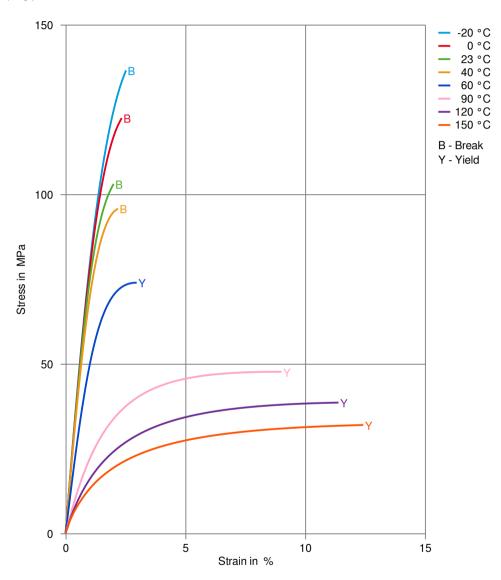
Additives

Flame retardant, Non-halogenated/Red phosphorous free flame retardant

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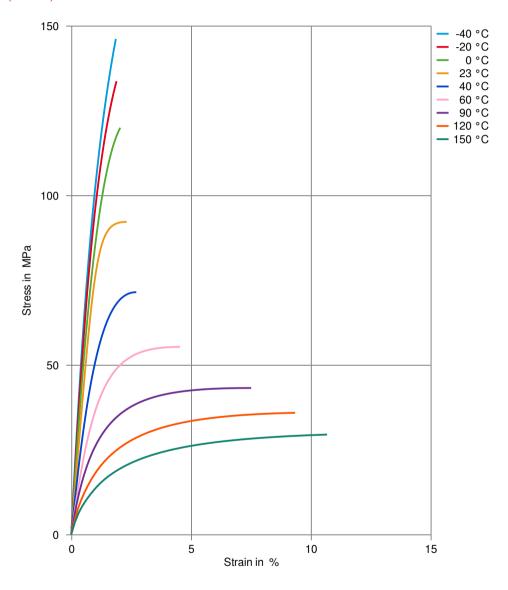
### Stress-strain (dry)



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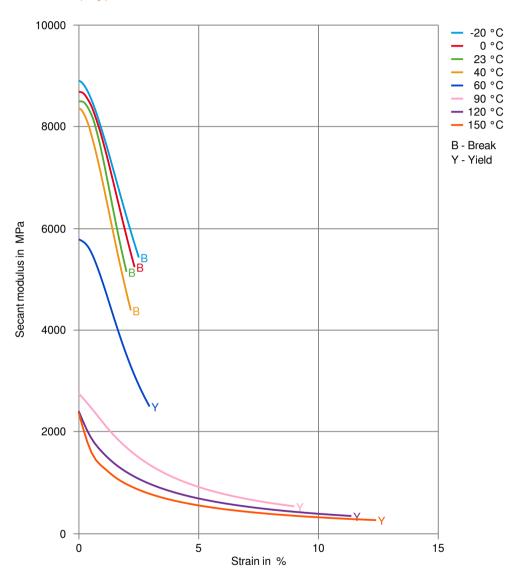
### Stress-strain (cond.)



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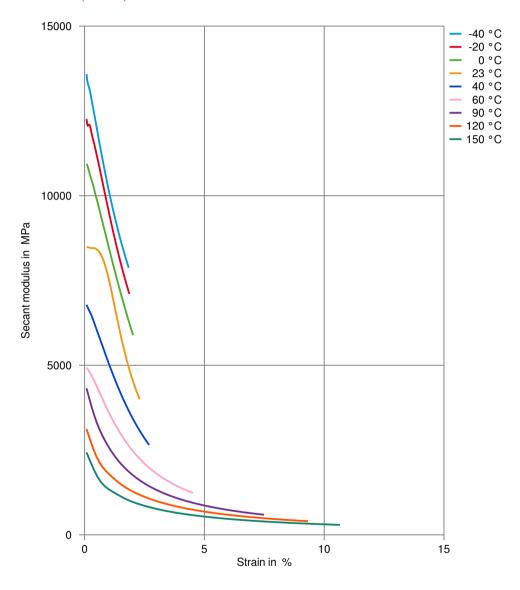
### Secant modulus-strain (dry)



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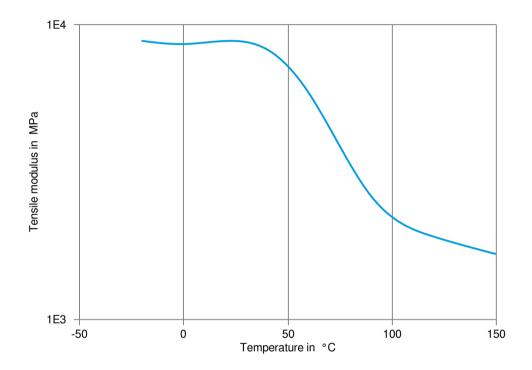
### Secant modulus-strain (cond.)



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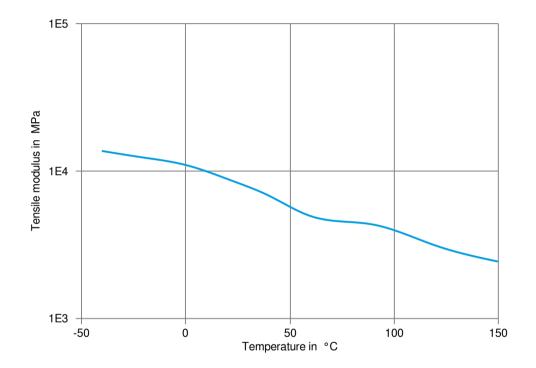
Tensile modulus-temperature (dry)



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Tensile modulus-temperature (cond.)



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### NYI ON RESIN

#### Mineral oils

#### Mineral oils

✓ SAE 10W40 multigrade motor oil, 130°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

X Zinc Chloride solution (50% by mass), 23°C

#### Other

- ✓ Water, 23°C
- X Water, 90°C
- ✗ Coolant Glysantin G48, 1:1 in water, 125°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).

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Revised: 2023-01-19 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 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 equipment, pr

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