



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® FR50 NC010 is a 25% Glass Reinforced, Flame Retardant, Polyamide 66

Product information

Product information			
Resin Identification	` '		ISO 1043
Part Marking Code	>PA66-GF25FR(17)< ISO 11469		
ISO designation	ISO 16396-PA66	6,GF25 FR(17),M1F1	IGNR,S14-100
Rheological properties	dry/cond.		
Viscosity number	150 ^[1] /*	cm³/g	ISO 307, 1628
Moulding shrinkage, parallel	0.3/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.8/-	%	ISO 294-4, 2577
[1]: 96% Sulfuric acid			,
Typical mechanical properties	dry/cond.		
Tensile modulus	10000/8000	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	170/120	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	2.6/3	%	ISO 527-1/-2
Flexural modulus	9500/7500	MPa	ISO 178
Charpy impact strength, 23°C	60/-	kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	50/-	kJ/m ²	ISO 179/1eU
Charpy impact strength, -40°C	50/-	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	12/13	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	12/11	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -40°C	12/10	kJ/m²	ISO 179/1eA
Poisson's ratio	0.34/0.34		
Thermal properties	dry/cond.		
Melting temperature, 10°C/min	262 ^[2] /*	°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	240/*	°C	ISO 75-1/-2
Coeff. of linear therm. expansion, parallel, -40-23°C	20/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel, 55-160°C	21/*	E-6/K	ISO 11359-1/-2

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Coeff. of linear therm. expansion, normal, -40-23°C Coeff. of linear therm. expansion, normal, 55-160°C 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, strength, 0.75mm RTI, strength, 1.5mm RTI, strength, 1.5mm RTI, strength, 3.0mm RTI, strength, 3.0mm RTI, strength, 3.0mm [2]: 1st heating	55/* 110/* 130 130 130 105 115 115 105 115/* 120	E-6/K E-6/K °C °C °C °C °C °C °C	ISO 11359-1/-2 ISO 11359-1/-2 UL 746B
Flammability	dry/cond.		
Burning Behav. at 1.5mm nom. thickn. Thickness tested UL recognition	V-0/* 1.5/* yes/*	class mm	IEC 60695-11-10 IEC 60695-11-10 UL 94
Burning Behav. at thickness h Thickness tested UL recognition	V-0/* 0.35/* yes/*	class mm	IEC 60695-11-10 IEC 60695-11-10 UL 94
Burning Behav. 5V at thickness h Thickness tested UL recognition	5VA/* 1.5/* yes/*	class mm	IEC 60695-11-20 IEC 60695-11-20 UL 94
Glow Wire Flammability Index, 0.75mm Glow Wire Flammability Index, 1.5mm Glow Wire Flammability Index, 3.0mm	960/- 960/- 960/-	°C °C °C	IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm Glow Wire Ignition Temperature, 1.5mm Glow Wire Ignition Temperature, 3.0mm	900/- 900/- 930/-	°C °C °C	IEC 60695-2-13 IEC 60695-2-13 IEC 60695-2-13
FMVSS Class	SE/B		ISO 3795 (FMVSS 302)
Electrical properties	dry/cond.		
Volume resistivity Surface resistivity	>1E13/2.7E10 */1 .8E14 ^[3]	Ohm	IEC 62631-3-1 IEC 62631-3-2
Electric strength Comparative tracking index [3]: dry [4]: 2mm thickness	24 ^[4] /22 275/-	kV/mm	IEC 60243-1 IEC 60112
Physical/Other properties	dry/cond.		
Humidity absorption, 2mm Water absorption, Immersion 24h Density [5]: thickness,2mm	1.3 / * 0.6 ^[5] /* 1570 / -	% % kg/m³	Sim. to ISO 62 Sim. to ISO 62 ISO 1183

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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	≤0.2	m/s
Mold Temperature Optimum	100	°C
Min. mould temperature	70	°C
Max. mould temperature	120	°C
Hold pressure range	50 - 100	MPa
Hold pressure time	3	s/mm

Characteristics

Processing Injection Moulding

Delivery form Pellets

Additives Flame retardant Special characteristics Flame retardant

Automotive

OEM STANDARD ADDITIONAL INFORMATION

General Motors GMW17481P-PA66-GF25 Natural

Hyundai MS941-03 Type A-5 FRV0

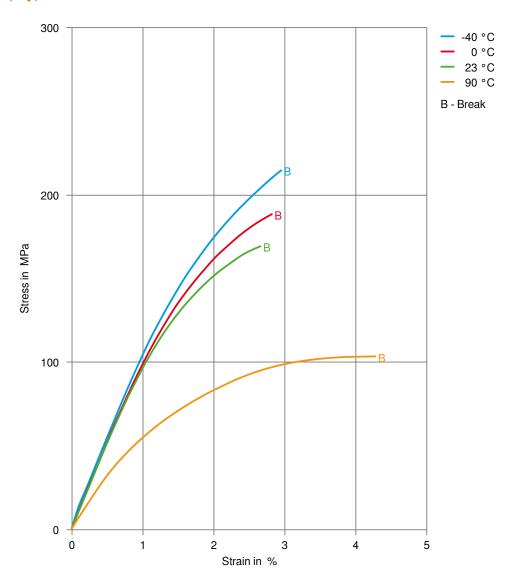
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Stress-strain (dry)



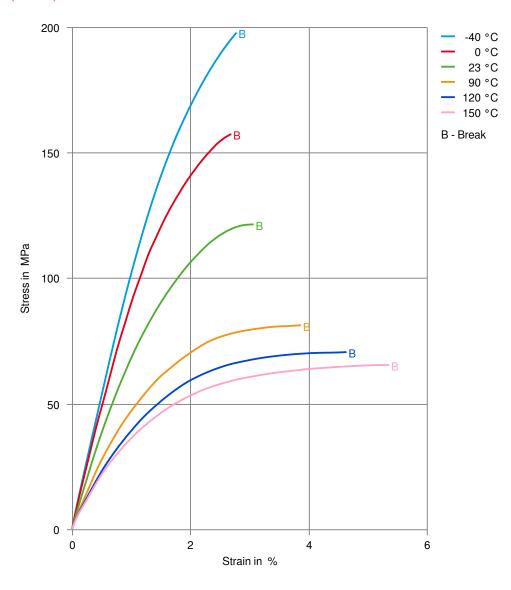
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NYLON RESIN

Stress-strain (cond.)



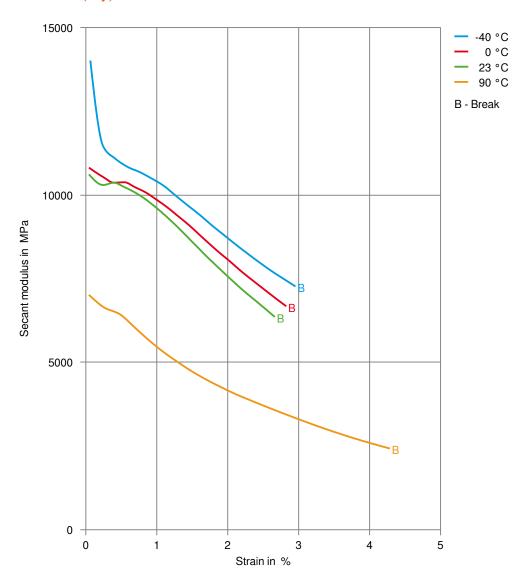
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Secant modulus-strain (dry)



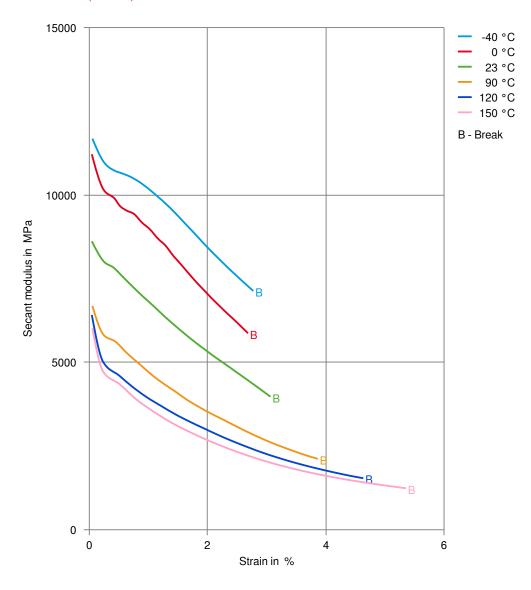
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Secant modulus-strain (cond.)



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Zytel® FR50 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
- ✓ 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
- 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
- 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).

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Revised: 2025-04-23 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 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 equipment, processing technique or material mentioned in this publication should satisfy themselves that they can meet all applicable safety and health standards. We strongly recommend that users

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