

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® FR7025V0F NC010 is an Unreinforced, Flame Retardant, Non-Halogenated Polyamide 66 for injection molding. It does not contain elemental phosphorous or heavy metals and uses an halogen free flame retardant package.

Product information

Resin Identification Part Marking Code ISO designation	PA66-FR(30) >PA66-FR(30)< ISO 16396-PA66) 6,FR(30),M1F1G1NR,S14-040	ISO 1043 ISO 11469
Rheological properties	dry/cond.		
Moulding shrinkage, parallel	0.9/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.0/-	%	ISO 294-4, 2577
Typical mechanical properties	dry/cond.		
Tensile modulus	3700/2000	MPa	ISO 527-1/-2
Tensile stress at yield, 50mm/min	*/55	MPa	ISO 527-1/-2
Tensile strain at yield, 50mm/min	*/20	%	ISO 527-1/-2
Tensile stress at break, 5mm/min	80/*	MPa	ISO 527-1/-2
Nominal strain at break	*/30	%	ISO 527-1/-2
Tensile strain at break, 5mm/min	10/*	%	ISO 527-1/-2
Flexural modulus	3660/-	MPa	ISO 178
Charpy impact strength, 23°C	135/-	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	3.7/-	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30 °C	3/-	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -40 °C	3/-	kJ/m²	ISO 179/1eA
Poisson's ratio	0.36/0.4		



NYLON RESIN

Thermal properties	dry/cond.		
Melting temperature, 10°C/min	260/*	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	80/20	°Č	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	84/*	°Č	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	235/*	°C	ISO 75-1/-2
Ball pressure test	220/-	°C	IEC 60695-10-2
Coeff. of linear therm. expansion, parallel, -40-23°C	60/*	E-6/K	ISO 11359-1/-2
CLTE, Parallel, 23-55°C(73-130°F)	65/-	E-6/K	ASTM E 831
Coeff. of linear therm. expansion, parallel, 55-160°C	70/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23°C	70/*	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion	75/-	E-6/K	ASTM E 831
(CLTE), Normal,23-55°C			
(73-130°F)			
Coefficient of linear thermal expansion	116/*	E-6/K	ISO 11359-1/-2
(CLTE), normal, 55-160°C			
RTI, electrical, 0.75mm	130	°C	UL 746B
RTI, electrical, 1.5mm	130	°C	UL 746B
RTI, electrical, 3.0mm	130	°C	UL 746B
RTI, impact, 0.75mm	75	°C	UL 746B
RTI, impact, 1.5mm	75	°C	UL 746B
RTI, impact, 3.0mm	75	°C	UL 746B
RTI, strength, 0.75mm	85	°C	UL 746B
RTI, strength, 1.5mm	85/*	°C	UL 746B
RTI, strength, 3.0mm	85	°C	UL 746B
Flammability	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	V-0/*	class	IEC 60695-11-10
Thickness tested	1.5/*	mm	IEC 60695-11-10
UL recognition	yes/*		UL 94
Burning Behav. at thickness h	V-0/*	class	IEC 60695-11-10
Thickness tested	0.75/*	mm	IEC 60695-11-10
UL recognition	yes/*		UL 94
Oxygen index	39/*	%	ISO 4589-1/-2
Glow Wire Flammability Index, 1.5mm	960/-	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	960/-	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 1.5mm	775/-	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 3.0mm	775/-	°C	IEC 60695-2-13
FMVSS Class	DNI ^[DS]		ISO 3795 (FMVSS 302)
[DS]: Derived from similar grade			
Electrical properties	dry/cond.		
Electric strength	31/30	kV/mm	IEC 60243-1
Comparative tracking index	600/-		IEC 60112
· · · · · · · · · · · · · · · · · · ·			



NYLON RESIN

Physical/Other properties	dry/cond.		
Humidity absorption, 2mm Water absorption, Immersion 24h Density [1]: wall thickness 2mm	2.5/* 1.8 ^[1] /* 1160/-	% % kg/m³	Sim. to ISO 62 Sim. to ISO 62 ISO 1183
Injection			
Drying Recommended	yes		
Drying Temperature	80		
Drying Time, Dehumidified Dryer	2 - 4	h	
Processing Moisture Content	≤0.2	%	
Melt Temperature Optimum	280	°C	
Min. melt temperature	270	°C	
Max. melt temperature	290	°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	3	s/mm	
Ejection temperature	210	°C	

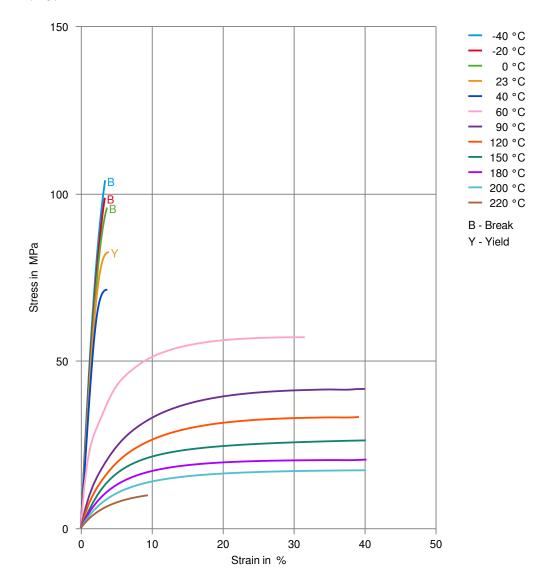
Characteristics

Additives

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

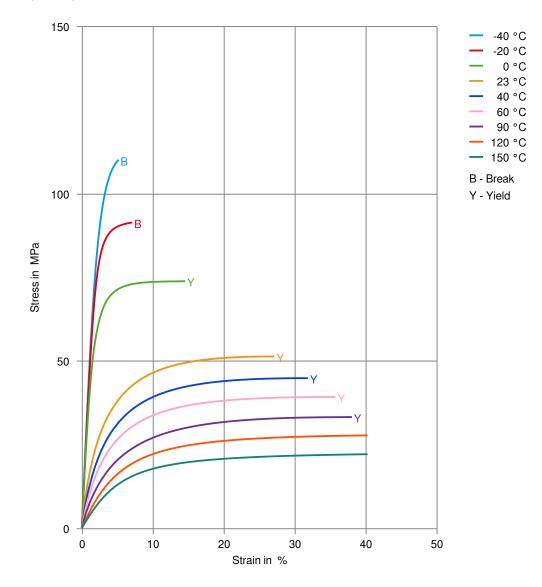


Stress-strain (dry)



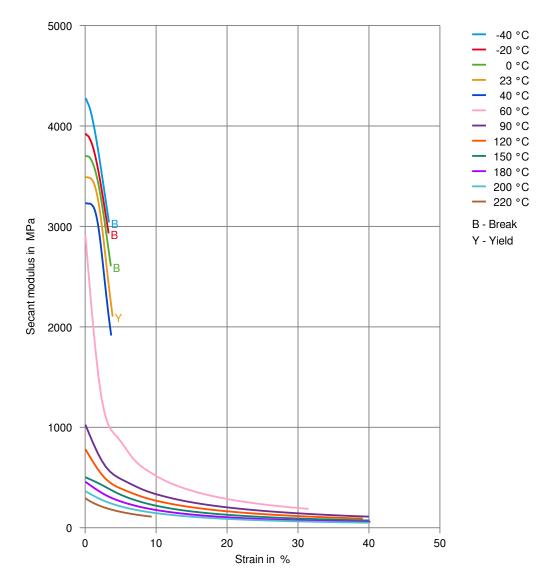


Stress-strain (cond.)



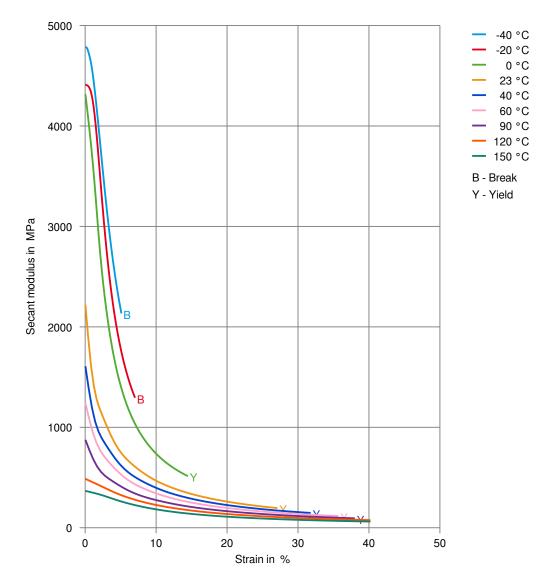


Secant modulus-strain (dry)



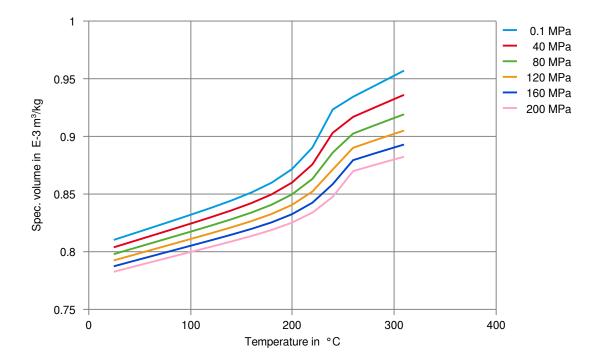


Secant modulus-strain (cond.)



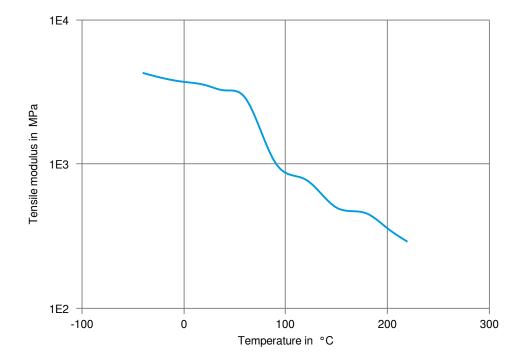


Specific volume-temperature (pvT)



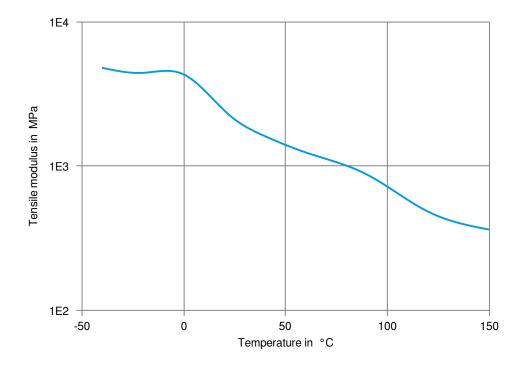


Tensile modulus-temperature (dry)





Tensile modulus-temperature (cond.)





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
- ✗ 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

Printed: 2024-04-11



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
- ★ 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).

Printed: 2024-04-11

Page: 12 of 12

Revised: 2024-03-28 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 product 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 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 s

© 2024 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. KEPITAL is a registered trademark of Korea Engineering Plastics Company, Ltd.