



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® MT409AHS NC010 is a Medium Toughened, high performance, heat stabilised polyamide 66 resin having good stiffness, improved knit line strength, surface appearance with outstanding processability.

Product information

Resin Identification Part Marking Code ISO designation	PA66-I >PA66-I< ISO 16396-PA66-I,,M1G1HNR,S14-020		ISO 1043 ISO 11469
Rheological properties	dry/cond.		
Moulding shrinkage, parallel	1.5/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.7/-	%	ISO 294-4, 2577
Typical mechanical properties	dry/cond.		
Tensile modulus	2400/1100	MPa	ISO 527-1/-2
Tensile stress at yield, 50mm/min	61/43	MPa	ISO 527-1/-2
Tensile strain at yield, 50mm/min	5/28	%	ISO 527-1/-2
Tensile stress at break, 50mm/min	50/-	MPa	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	2200/1000	MPa	ISO 178
Flexural strength	75/53 ^[C]	MPa	ISO 178
Tensile creep modulus, 1000h	*/820	MPa	ISO 899-1
Charpy impact strength, 23°C	N/N	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	N/N	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	21/40	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	13/13	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -40°C	13/-	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	18/29	kJ/m²	ISO 180/1A
Izod notched impact strength, -30°C	15.0 / 15.0	kJ/m²	ISO 180/1A
Izod notched impact strength, -40°C	13.0/11.0	kJ/m²	ISO 180/1A
Hardness, Rockwell, M-scale	65/55 ^[DS]		ISO 2039-2
Hardness, Rockwell, R-scale	115/105 ^[DS]		ISO 2039-2
Ball indentation hardness, H 358/30	-/60 ^[OT, 1]		ISO 2039-1
Ball indentation hardness, H 961/30	125/-	MPa	ISO 2039-1
Poisson's ratio	0.38/0.45		

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[C]: Calculated

[DS]: Derived from similar grade

[OT]: One time tested

[1]: 132/30

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	66/*	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	205/*	°C	ISO 75-1/-2
Coefficient of linear thermal expansion	100/*	E-6/K	ISO 11359-1/-2
(CLTE), parallel			
Coefficient of linear thermal expansion (CLTE),	120/*	E-6/K	ISO 11359-1/-2
normal			
Thermal conductivity of melt	0.14	W/(m K)	ISO 22007-2
Specific heat capacity of melt	2730	J/(kg K)	ISO 22007-4
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	65	°C	UL 746B
RTI, impact, 1.5mm	105	°C	UL 746B
RTI, impact, 3.0mm	105	°C	UL 746B
RTI, strength, 0.75mm	95	°C	UL 746B
RTI, strength, 1.5mm	105/*	°C	UL 746B
RTI, strength, 3.0mm	110	°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	0.8/*	mm	IEC 60695-11-10
UL recognition	yes/*		UL 94
Thickness tested	3/*	mm	IEC 60695-11-20
UL recognition	yes/*		UL 94
Oxygen index	20/*	%	ISO 4589-1/-2
Glow Wire Flammability Index, 1.0mm	750/- ^[DS]	°C	IEC 60695-2-12
FMVSS Class	В		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	29	mm/min	ISO 3795 (FMVSS 302)
[DS]: Derived from similar grade			
Electrical properties	dry/cond.		
Relative permittivity, 100Hz	3.6/6.6		IEC 62631-2-1
Relative permittivity, 1MHz	3.4/3.7		IEC 62631-2-1
Dissipation factor, 100Hz	50/1800	E-4	IEC 62631-2-1
Dissipation factor, 100Hz	120/440	E-4	IEC 62631-2-1
Volume resistivity	>1E13/3E10	Ohm.m	IEC 62631-3-1
Surface resistivity	*/1E13	Ohm	IEC 62631-3-1
Juliace resistivity	/ IE13	Ollili	IEU 02031-3-2

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Electric strength Comparative tracking index Electric Strength, Short Time, 2mm	23/22 600/- 23/22	kV/mm kV/mm	IEC 60243-1 IEC 60112 IEC 60243-1
Physical/Other properties	dry/cond.		
Humidity absorption, 2mm Water absorption, 2mm Water absorption, Immersion 24h Density Density of melt [C]: Calculated	2.1/* 7.2/* ^[C] 1.3/* 1110/- 930	% % % kg/m³ kg/m³	Sim. to ISO 62 Sim. to ISO 62 Sim. to ISO 62 ISO 1183
Film Properties	dry/cond.		
Strain at yield, parallel	4.4/*	%	ISO 527-3
VDA Properties	dry/cond.		
Emission of organic compounds Odour Fogging, G-value (condensate)	10 4 0.1/*	μgC/g class mg	VDA 277 VDA 270 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	285	°C
Min. melt temperature	270	°C
Max. melt temperature	300	°C
Screw tangential speed	≤0.3	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	4	s/mm
Ejection temperature	217	°C

Characteristics

Processing Injection Moulding, Extrusion

Delivery form Pellets

Additives Release agent

Special characteristics High impact or impact modified, Heat stabilised or stable to heat

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Automotive

OEM STANDARD ADDITIONAL INFORMATION

 Ford
 WSS-M4D706-A4

 Ford
 WSS-M4D706-B1

General MotorsGMW16447P-PA66-T2NaturalGeneral MotorsGMW16558P-PA66-T1NaturalGeneral MotorsGMW16558P-PA66-T3Natural

Mercedes-Benz DBL5410.01 PA66-I

Stellantis MS.50017 / PA66-EPDM.1600F.20I.HS CPN4853, CPN2055;01994_16_00011

Stellantis - ChryslerMS.50017 / CPN-2055NaturalStellantis - ChryslerMS.50017 / CPN-4853Natural

 VW Group
 VW 50127 PA66-2

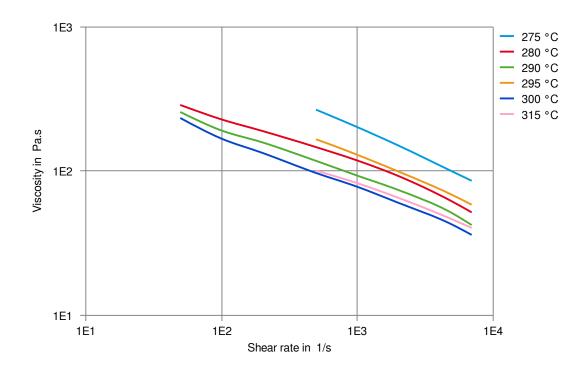
 VW Group
 VW 50133 PA66-2-A

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Viscosity-shear rate

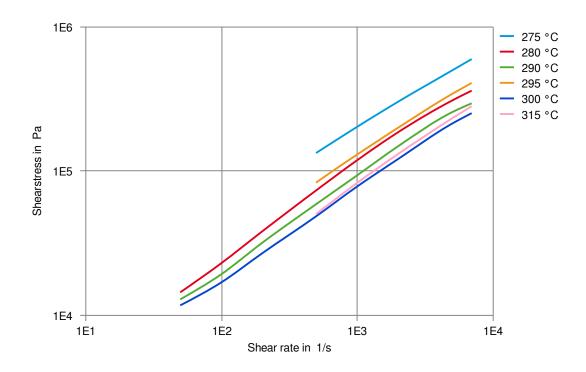


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Shearstress-shear rate

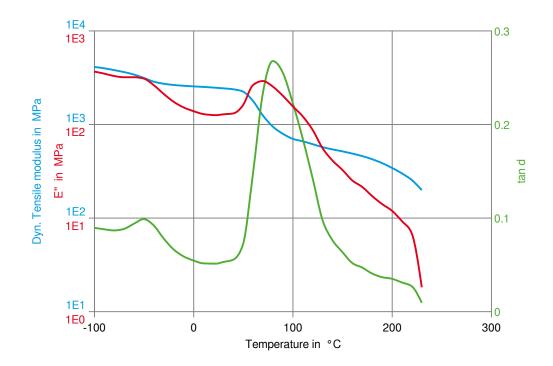


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Dynamic Tensile modulus-temperature (dry)

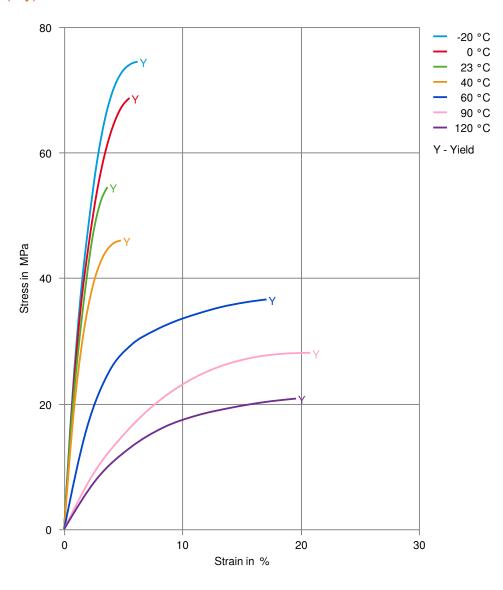


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Stress-strain (dry)

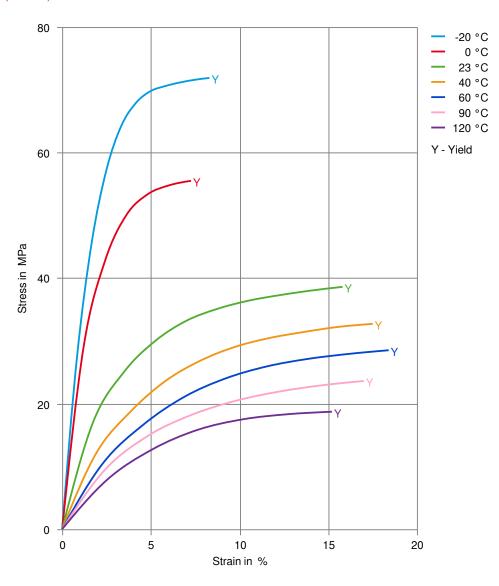


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Stress-strain (cond.)

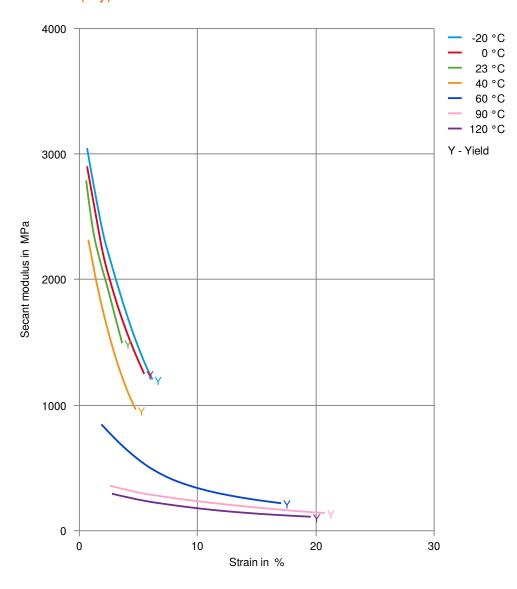


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Secant modulus-strain (dry)

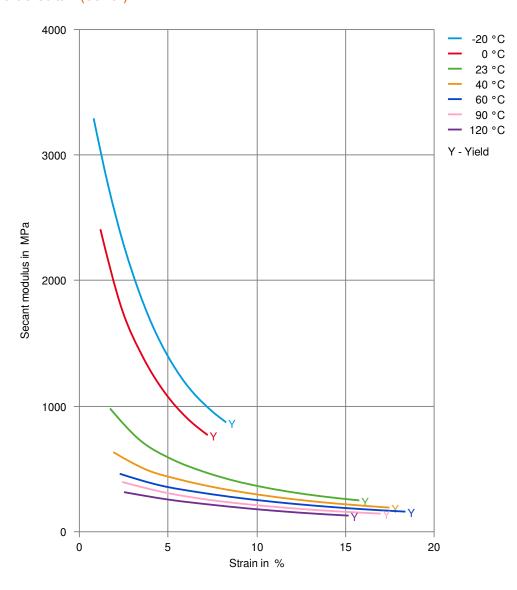


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Secant modulus-strain (cond.)

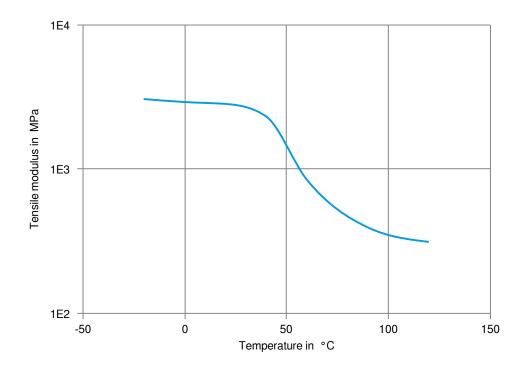


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Tensile modulus-temperature (dry)

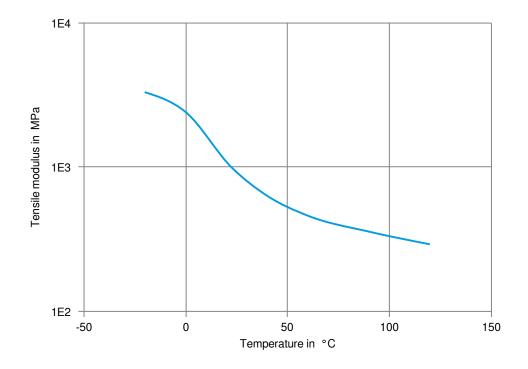


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Tensile modulus-temperature (cond.)



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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
- ★ SAE 80/90 hypoid-gear oil, 130°C
- ✓ Insulating Oil, 23°C
- X Motor oil OS206 304 Ref.Eng.Oil, ISP, 135°C
- X Automatic hypoid-gear oil Shell Donax TX, 135°C
- X Hydraulic oil Pentosin CHF 202, 125°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

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Salt solutions

- ✓ Sodium Chloride solution (10% by mass), 23°C
- X Sodium Hypochlorite solution (10% by mass), 23°C
- ✓ 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: 2025-04-30 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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