

DuPont™ Zytel® ST801AHS NC010

NYLON RESIN

Product Information

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, DuPont recommends, 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® ST801AHS NC010 is a Super Tough, high performance polyamide 66 resin. It offers outstanding molding performance in injection molding applications.

General information	Value	Unit	Test Standard
Resin Identification	PA66-HI	-	ISO 1043
Part Marking Code	PA66-HI	-	ISO 11469
Rheological properties	dry / cond	Unit	Test Standard
Molding shrinkage, parallel	1.8 / -	%	ISO 294-4, 2577
Molding shrinkage, normal	1.4 / -	%	ISO 294-4, 2577
Postmolding shrinkage, normal, 48h at 175 °F	0.05 / *	%	ISO 294-4
Postmolding shrinkage, parallel, 48h at 175 °F	0.05 / *	%	ISO 294-4
Mechanical properties	dry / cond	Unit	Test Standard
Tensile Modulus	2000 / 900	MPa	ISO 527-1/-2
Yield stress	52 / *	MPa	ISO 527-1/-2
Yield strain	4 / *	%	ISO 527-1/-2
Nominal strain at break	50 / *	%	ISO 527-1/-2
Stress at 50% strain	* / 45	MPa	ISO 527-1/-2
Strain at break	* / >50	%	ISO 527-1/-2
Flexural Modulus	1900 / 800	MPa	ISO 178
Flexural Stress at 3.5%	55 / -	MPa	ISO 178
Charpy impact strength, 73 °F	N / N	kJ/m ²	ISO 179/1eU
Charpy notched impact strength			ISO 179/1eA
73 °F	80 / 110	kJ/m ²	
-22 °F	20 / 17	kJ/m ²	
Izod notched impact strength			ISO 180/1A
73 °F	80 / 95	kJ/m ²	
-22 °F	19 / 19	kJ/m ²	
-40 °F	19 / 16	kJ/m ²	
Ball indentation hardness, H 358/30	104 / -	MPa	ISO 2039-1
Thermal properties	dry / cond	Unit	Test Standard
Melting temperature, 18 °F/min	262 / *	°C	ISO 11357-1/-3
Glass transition temperature, 18 °F/min	75 / -	°C	ISO 11357-1/-2
Temp. of deflection under load			ISO 75-1/-2
260 psi	62 / *	°C	
65 psi	157 / *	°C	
Coeff. of linear therm. expansion, parallel	90 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	120 / *	E-6/K	ISO 11359-1/-2
RTI, electrical			UL 746B
30mil	130 / *	°C	
60mil	130 / *	°C	
120mil	130	°C	

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RTI, impact			UL 746B
30mil	65	°C	
60mil	105 / *	°C	
120mil	105	°C	
RTI, strength			UL 746B
30mil	95	°C	
60mil	105 / *	°C	
120mil	110	°C	
Flammability	dry / cond	Unit	Test Standard
Burning Behav. at 60mil 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	0.75 / *	mm	IEC 60695-11-10
UL recognition	yes / *	-	UL 94
Glow Wire Flammability Index			IEC 60695-2-12
15mil	750 / -	°C	
30mil	750 / -	°C	
40mil	750 / -	°C	
60mil	750 / -	°C	
80mil	750 / -	°C	
120mil	750 / -	°C	
Glow Wire Ignition Temperature			
15mil	725 / -	°C	IEC 60695-2-12
30mil	725 / -	°C	IEC 60695-2-13
40mil	725 / -	°C	IEC 60695-2-13
60mil	725 / -	°C	IEC 60695-2-13
80mil	725 / -	°C	IEC 60695-2-13
120mil	725 / -	°C	IEC 60695-2-13
Glow Wire Temperature, No Flame			IEC 60335-1
30mil	700 / -	°C	
40mil	700 / -	°C	
60mil	700 / -	°C	
80mil	700 / -	°C	
120mil	700 / -	°C	
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	24	mm/min	ISO 3795 (FMVSS 302)
Electrical properties	dry / cond	Unit	Test Standard
Relative permittivity			IEC 62631-2-1
100Hz	3.5 / 6.2	-	
1MHz	3.3 / 3.6	-	
Dissipation factor			IEC 62631-2-1
100Hz	50 / 1770	E-4	
1MHz	110 / 400	E-4	
Volume resistivity	>1E13 / 2.7E10	Ohm*m	IEC 62631-3-1
Surface resistivity	* / 5E12	Ohm	IEC 62631-3-2
Electric strength	24 / 24	kV/mm	IEC 60243-1
Comparative tracking index	600 / -	-	IEC 60112
Electric Strength, Short Time, 2mm	24 / 24	kV/mm	IEC 60243-1
Other properties	dry / cond	Unit	Test Standard
Humidity absorption, 80mil	2 / *	%	Sim. to ISO 62
Water absorption, 80mil	6.5 / *	%	Sim. to ISO 62
Density	1080 / -	kg/m ³	ISO 1183
Water Absorption, Immersion 24h	1.1 / *	%	Sim. to ISO 62



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Film Properties	dry / cond	Unit	Test Standard
Strain at yield, parallel	4.4 / *	%	ISO 527-3
VDA Properties	Value	Unit	Test Standard
Emission of organic compounds	13	µgC/g	VDA 277
Injection	dry / cond	Unit	Test Standard
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	-
Max. screw tangential speed	0.3 / *	m/s	-
Mold Temperature Optimum	80	°C	-
Min. mold temperature	50	°C	-
Max. mold temperature	100	°C	-
Hold pressure range	50 - 100	MPa	-
Hold pressure time	4	s/mm	-
Ejection temperature	190	°C	-

Characteristics			
Processing	<ul style="list-style-type: none"> • Injection Molding 		
Delivery form	<ul style="list-style-type: none"> • Pellets 		
Additives	<ul style="list-style-type: none"> • Release agent 		
Special characteristics	<ul style="list-style-type: none"> • Heat stabilized or stable to heat 		
Regional Availability	<ul style="list-style-type: none"> • North America • Europe 	<ul style="list-style-type: none"> • Asia Pacific • South and Central America 	<ul style="list-style-type: none"> • Near East/Africa • Global

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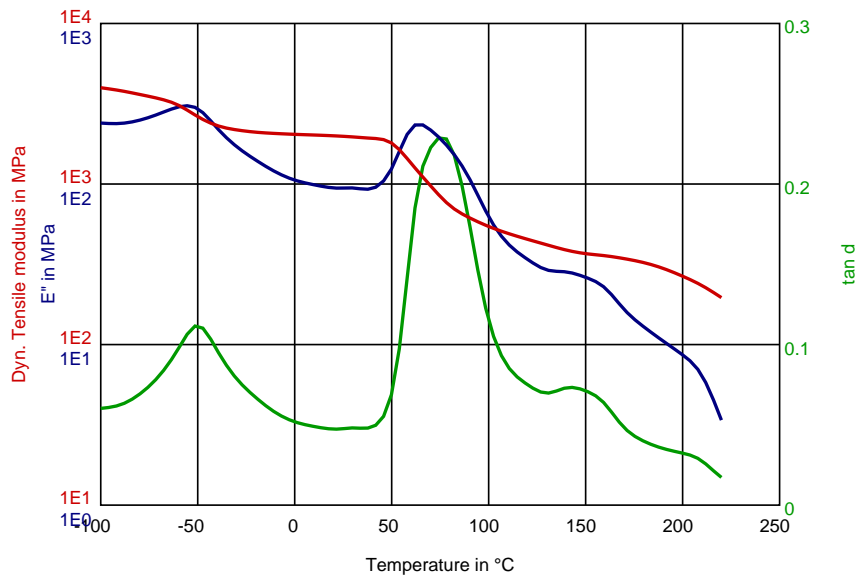


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Diagrams

Dynamic Tensile modulus-temperature (dry)



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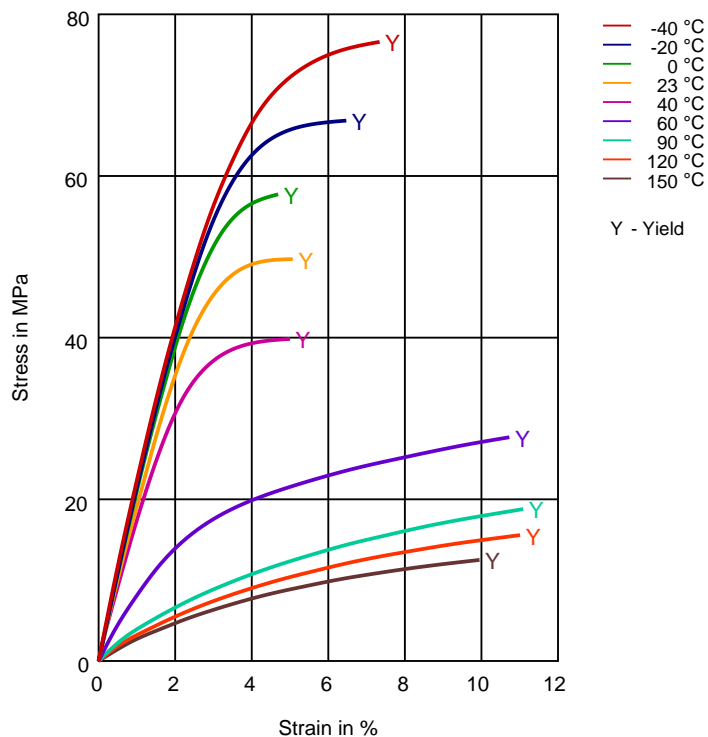
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Stress-strain (dry)



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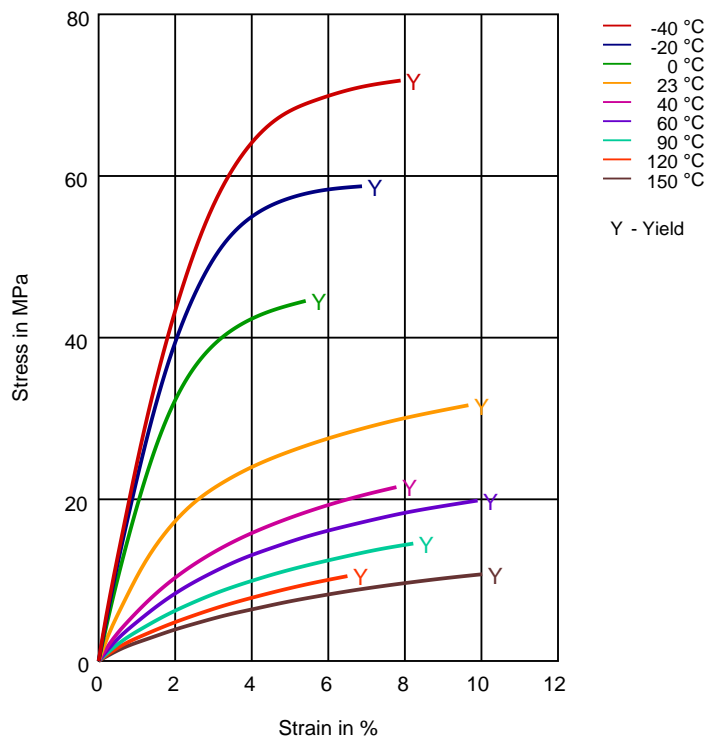
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Stress-strain (cond.)



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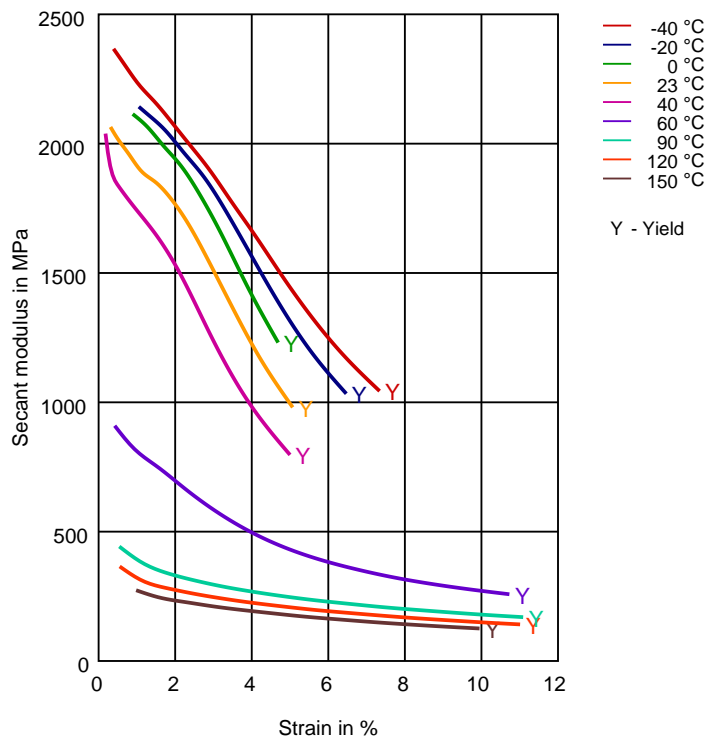
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Secant modulus-strain (dry)



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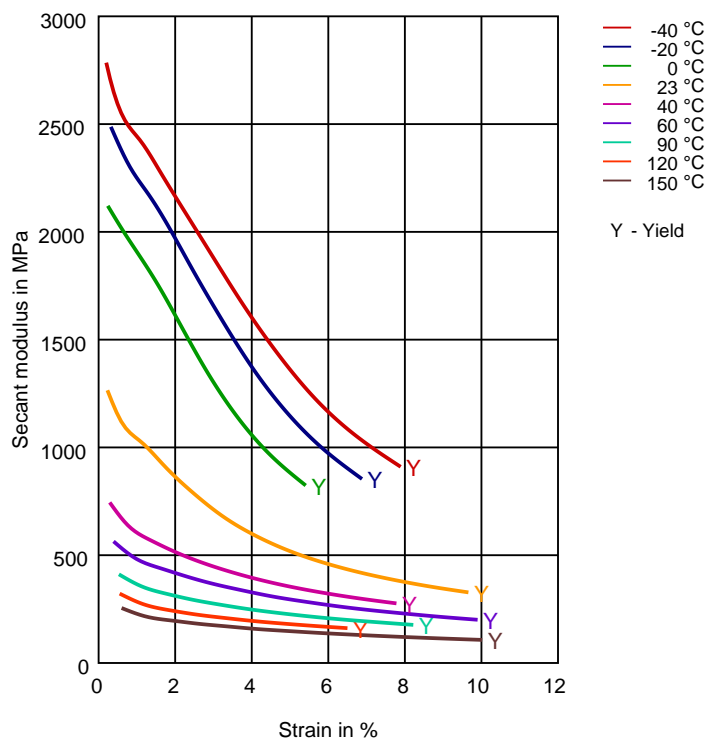
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Secant modulus-strain (cond.)



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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)
- ✗ Hydrochloric Acid (36% by mass) (23 °C)
- ✗ Nitric Acid (40% by mass) (23 °C)
- ✗ Sulfuric Acid (38% by mass) (23 °C)
- ✗ 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)
- ✓ SAE 80/90 hypoid-gear oil (130 °C)
- ✓ Insulating Oil (23 °C)
- ✓ Motor oil OS206 304 Ref.Eng.Oil, ISP (135 °C)
- ✓ Automatic hypoid-gear oil Shell Donax TX (135 °C)
- ✓ 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)

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- ✓ 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)
- ✓ Sodium Carbonate solution (20% by mass) (23°C)
- ✓ Sodium Carbonate solution (2% by mass) (23°C)
- ✗ Zinc Chloride solution (50% by mass) (23°C)

Other

- ✓ Ethyl Acetate (23°C)
- ✗ 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).

- ✗ 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).

Contact DuPont for Material Safety Data Sheet, general guides and/or additional information about ventilation, handling, purging, drying, etc. ISO Mechanical properties measured at 160 mil (Hytrek® measured at 80 mil), IEC Electrical properties measured at 80 mil, all ASTM properties measured at 120 mil, and test temperatures are 73°F unless otherwise stated.

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