

DuPont™ Zytel® ST801 NC010A

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® ST801 NC010A is an unreinforced, super tough polyamide 66 for injection molding and extrusion. It offers outstanding impact resistance over a wide temperature and humidity range and high productivity.

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 / *	%	ISO 294-4
Mechanical properties	dry / cond	Unit	Test Standard
Tensile Modulus	290076 / 130534	psi	ISO 527-1/-2
Yield stress	7250 / 6240	psi	ISO 527-1/-2
Yield strain	5.7 / 37	%	ISO 527-1/-2
Nominal strain at break	32 / >50	%	ISO 527-1/-2
Flexural Stress at 3.5%	7980 / -	psi	ISO 178
Poisson's ratio	0.4 / 0.45	-	ISO 527-1/-2
Tensile creep modulus			ISO 899-1
1h	* / 174000	psi	
1000h	* / 109000	psi	
Charpy impact strength			ISO 179/1eU
73 °F	N / N	ftlb/in ²	
-22 °F	N / N	ftlb/in ²	
Charpy notched impact strength			ISO 179/1eA
73 °F	38.1 / 54.7	ftlb/in ²	
-22 °F	8.56 / 8.09	ftlb/in ²	
-40 °F	- / 7.14	ftlb/in ²	
Izod notched impact strength			ISO 180/1A
73 °F	38.1 / 47.6	ftlb/in ²	
-22 °F	9.04 / 9.04	ftlb/in ²	
-40 °F	6.66 / 6.66	ftlb/in ²	
Ball indentation hardness, H 358/30	15100 / -	psi	ISO 2039-1
Thermal properties	dry / cond	Unit	Test Standard
Melting temperature, 18 °F/min	505 / *	°F	ISO 11357-1/-3
Glass transition temperature, 18 °F/min	167 / -	°F	ISO 11357-1/-2
Temp. of deflection under load			ISO 75-1/-2
260 psi	147 / *	°F	
65 psi	270 / *	°F	
Coeff. of linear therm. expansion, parallel	6.67E-5 / *	in/in/°F	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	5.0E-5 / *	in/in/°F	ISO 11359-1/-2

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RTI, electrical			UL 746B
30mil	257 / *	°F	
60mil	257 / *	°F	
120mil	257	°F	
RTI, impact			UL 746B
30mil	167	°F	
60mil	167 / *	°F	
120mil	167	°F	
RTI, strength			UL 746B
30mil	185	°F	
60mil	185 / *	°F	
120mil	185	°F	
Flammability	dry / cond	Unit	Test Standard
Burning Beh. at 60mil nom. thickn.	HB / *	class	IEC 60695-11-10
Thickness tested	0.0591 / *	in	IEC 60695-11-10
UL recognition	yes / *	-	UL 94
Burning Beh. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested	0.0319 / *	in	IEC 60695-11-10
UL recognition	yes / *	-	UL 94
Oxygen index	20 / *	%	ISO 4589-1/-2
Glow Wire Flammability Index			IEC 60695-2-12
30mil	1340 / -	°F	
60mil	1250 / -	°F	
120mil	1200 / -	°F	
Glow Wire Ignition Temperature			IEC 60695-2-13
30mil	1250 / -	°F	
60mil	1250 / -	°F	
120mil	1250 / -	°F	
Flammability, 3.0mm	HB / *	-	IEC 60695-11-10
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	1.02	in/min	ISO 3795 (FMVSS 302)
Electrical properties	dry / cond	Unit	Test Standard
Relative permittivity			IEC 62631-2-1
100Hz	3.2 / 8	-	
1MHz	2.9 / 3.6	-	
Dissipation factor			IEC 62631-2-1
100Hz	80 / 1800	E-4	
1MHz	140 / 550	E-4	
Volume resistivity	1E13 / 1E11	Ohm*m	IEC 62631-3-1
Surface resistivity	* / >1E15	Ohm	IEC 62631-3-2
Electric strength	787 / -	kV/in	IEC 60243-1
Comparative tracking index	600 / -	-	IEC 60112
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	1.08 / -	g/cm ³	ISO 1183
VDA Properties	Value	Unit	Test Standard
Emission of organic compounds	38.4	µgC/g	VDA 277
Odor test	3	class	VDA 270
Injection	dry / cond	Unit	Test Standard
Drying Recommended	yes	-	-
Drying Temperature	≥176	°F	-
Drying Time, Dehumidified Dryer	2 - 4	h	-
Processing Moisture Content	≤0.2	%	-
Melt Temperature Optimum	554	°F	-
Min. melt temperature	536	°F	-

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Max. melt temperature	572	°F	-
Max. screw tangential speed	0.3 / *	m/s	-
Mold Temperature Optimum	176	°F	-
Min. mold temperature	122	°F	-
Max. mold temperature	212	°F	-
Hold pressure range	7250 - 14500	psi	-
Hold pressure time	0.102	s/mil	-
Ejection temperature	374	°F	-

Characteristics

Processing	• Injection Molding	• Other Extrusion
Regional Availability	• Europe	• Near East/Africa

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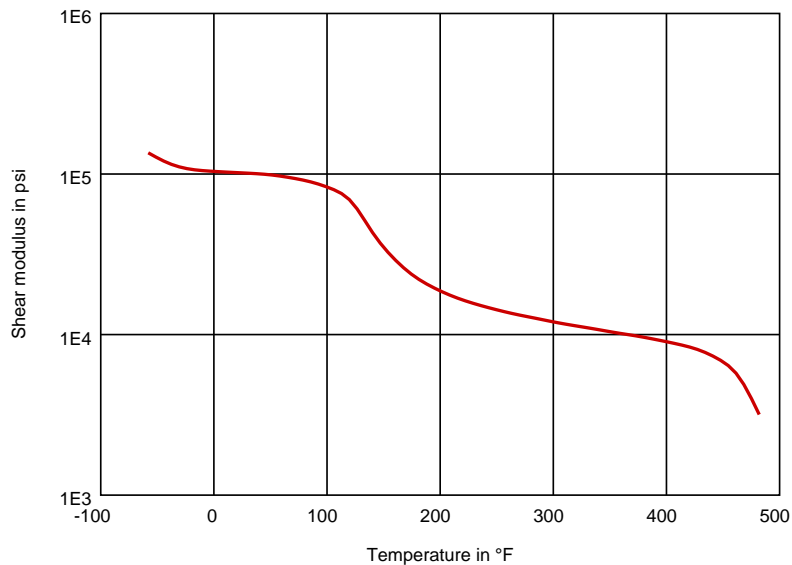


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Diagrams

Dynamic Shear modulus-temperature (dry)



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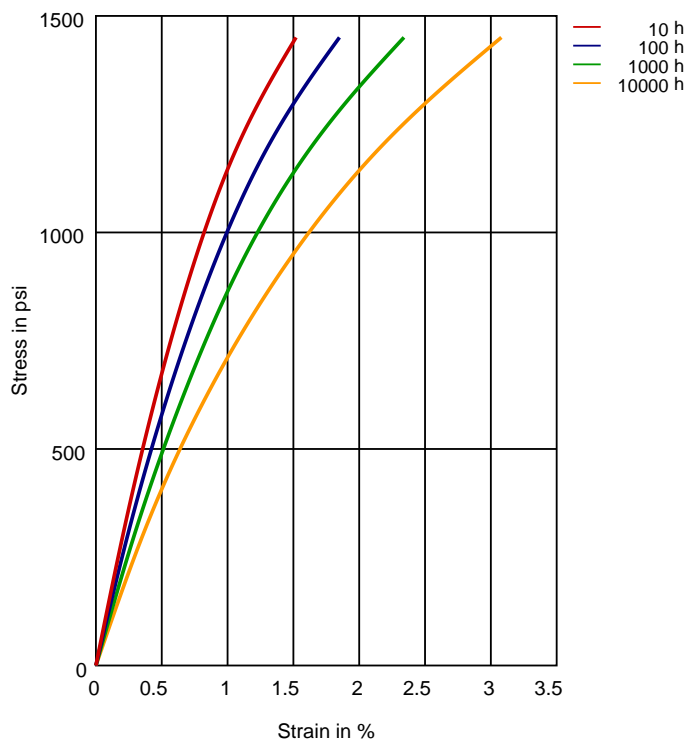
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Stress-strain (isochronous) 73°F(cond.)



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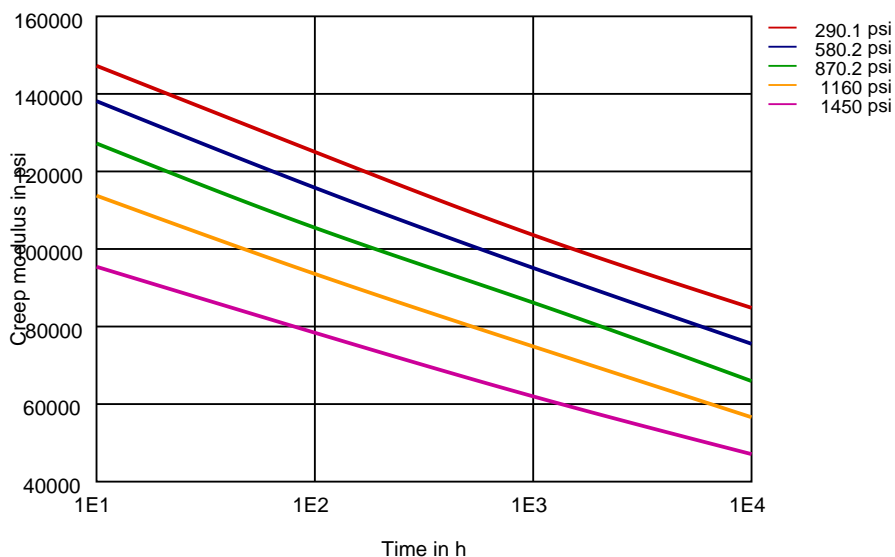
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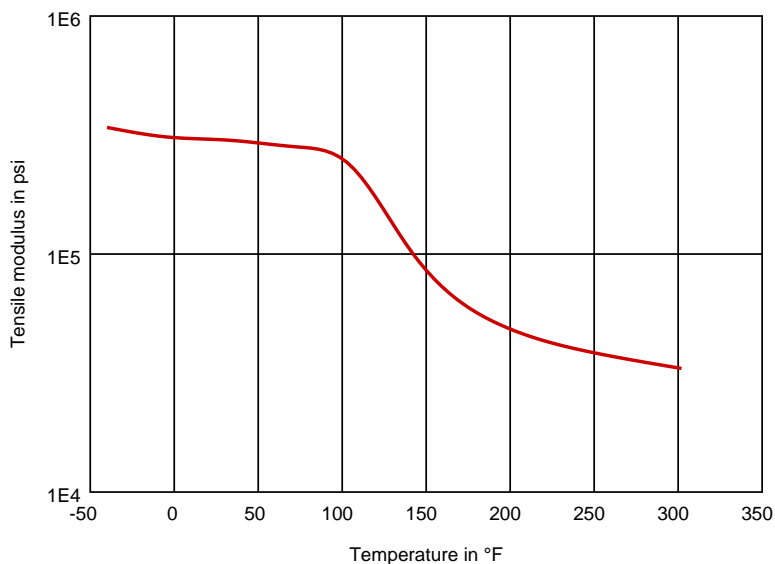
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Creep modulus-time 73 °F (cond.)



Tensile modulus-temperature (dry)



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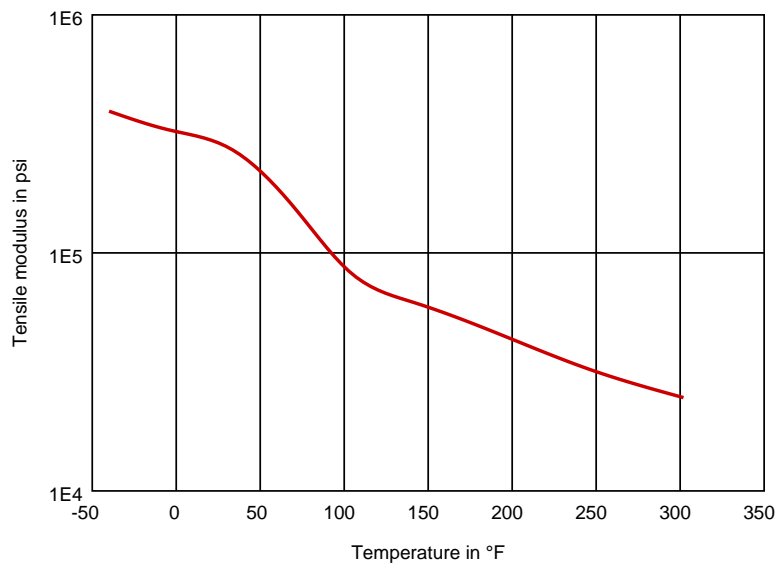
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Tensile modulus-temperature (cond.)



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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)
- ✗ 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)

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)

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- ✓ 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 (Hytrel® 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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