

# DuPont™ Zytel® ST801A NC010A

## NYLON RESIN

Product Information

Zytel® ST801A NC010A is an Unreinforced, Super Toughened, Polyamide 66

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
Viscosity number	130 / *	cm <sup>3</sup> /g	ISO 307, 1157, 1628
Molding shrinkage, parallel	1.8 / -	%	ISO 294-4, 2577
Molding shrinkage, normal	1.4 / -	%	ISO 294-4, 2577
Mechanical properties	dry / cond	Unit	Test Standard
Tensile Modulus	2000 / 900	MPa	ISO 527-1/-2
Stress at 50% strain	49 / 44	MPa	ISO 527-1/-2
Strain at break	>50 / >50	%	ISO 527-1/-2
Flexural Modulus	1800 / 700	MPa	ISO 178
Tensile creep modulus			ISO 899-1
1h	* / 800	MPa	
1000h	* / 700	MPa	
Charpy impact strength, 73°F	- / N	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength			ISO 179/1eA
73°F	70 <sup>[P]</sup> / 100 <sup>[P]</sup>	kJ/m <sup>2</sup>	
-22°F	20 / 20	kJ/m <sup>2</sup>	
Izod notched impact strength			ISO 180/1A
73°F	80 / 90	kJ/m <sup>2</sup>	
-22°F	15 / 15	kJ/m <sup>2</sup>	
-40°F	20 / 17	kJ/m <sup>2</sup>	
P: Partial Break			
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	63 / *	°C	
65 psi	157 / *	°C	
Vicat softening temperature, 90°F/h, 11 lbf	205 / *	°C	ISO 306
Coeff. of linear therm. expansion, parallel	140 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion			
normal	130 / *	E-6/K	ISO 11359-1/-2
Normal, 23-55°C (73-130°F)	130 / -	E-6/K	ASTM E 831
Normal, -40-23°C	110 / *	E-6/K	ISO 11359-1/-2
Normal, 55-160°C	130 / *	E-6/K	ISO 11359-1/-2
Parallel, 23-55°C (73-130°F)	140 / -	E-6/K	ASTM E 831
Parallel, -40-23°C	110 / *	E-6/K	ISO 11359-1/-2
Parallel, 55-160°C	160 / *	E-6/K	ISO 11359-1/-2
RTI, electrical			UL 746B
30mil	125 / *	°C	
60mil	125 / *	°C	
120mil	125	°C	
RTI, impact			UL 746B
30mil	75	°C	
60mil	75 / *	°C	
120mil	75	°C	

To find out more, visit [DuPont Performance Polymers](#) or contact nearest DuPont location.

North America

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RTI, strength			UL 746B
30mil	85	°C	
60mil	85 / *	°C	
120mil	85	°C	
<b>Flammability</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
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	0.81 / *	mm	IEC 60695-11-10
UL recognition	yes / *	-	UL 94
Oxygen index	20 / *	%	ISO 4589-1/-2
Hot Wire Ignition			UL 746A
60mil	15 / *	s	
120mil	20 / *	s	
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	<100	mm/min	ISO 3795 (FMVSS 302)
<b>Electrical properties</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
Relative permittivity			IEC 62631-2-1
100Hz	3.5 / 5.9	-	
1MHz	3.3 / 3.5	-	
Dissipation factor			IEC 62631-2-1
100Hz	50 / 1580	E-4	
1MHz	100 / 380	E-4	
Volume resistivity	>1E13 / 8.7E10	Ohm*m	IEC 62631-3-1
Surface resistivity	* / 1E12	Ohm	IEC 62631-3-2
Electric strength	25 / -	kV/mm	IEC 60243-1
Comparative tracking index	600 / -	-	IEC 60112
Electric Strength, Short Time, 2mm	25 / 26	kV/mm	IEC 60243-1
High Amperage Arc Ignition Resistance			UL 746A
60 mil	200 <sup>[1]</sup> / *	arcs	
120 mil	200 <sup>[2]</sup> / *	arcs	
2: >200			
<b>Other properties</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
Humidity absorption, 80mil	2 / *	%	Sim. to ISO 62
Water absorption, 80mil	6.5 / *	%	Sim. to ISO 62
Density	1070 / -	kg/m <sup>3</sup>	ISO 1183
Water Absorption, Immersion 24h	1.1 / *	%	Sim. to ISO 62
<b>Injection</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
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

Revised: 2018-05-15

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Processing	<ul style="list-style-type: none"><li>• Injection Molding</li><li>• Film Extrusion</li><li>• Profile Extrusion</li></ul>	<ul style="list-style-type: none"><li>• Sheet Extrusion</li><li>• Other Extrusion</li><li>• Coating</li></ul>	<ul style="list-style-type: none"><li>• Casting</li></ul>
Delivery form	<ul style="list-style-type: none"><li>• Pellets</li></ul>		
Additives	<ul style="list-style-type: none"><li>• Release agent</li></ul>		
Regional Availability	<ul style="list-style-type: none"><li>• North America</li><li>• Europe</li></ul>	<ul style="list-style-type: none"><li>• Asia Pacific</li><li>• South and Central America</li></ul>	<ul style="list-style-type: none"><li>• Near East/Africa</li><li>• Global</li></ul>

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### North America

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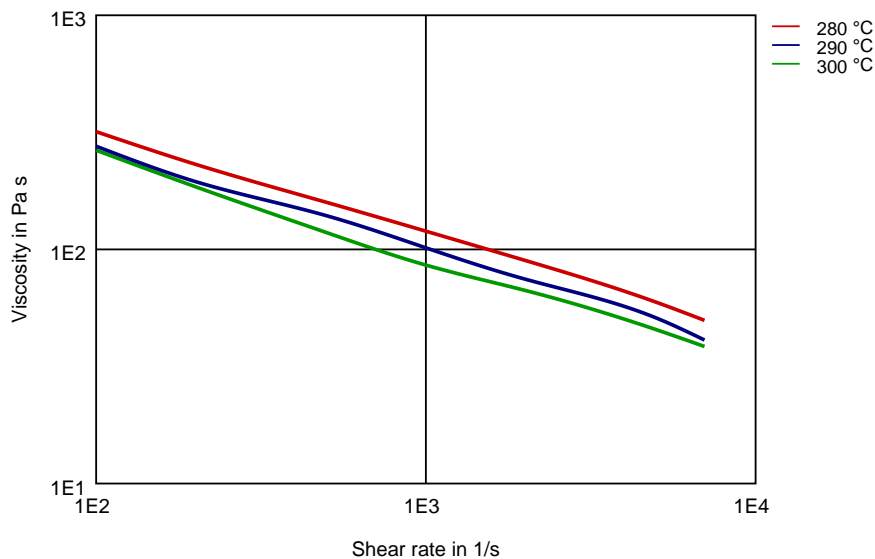


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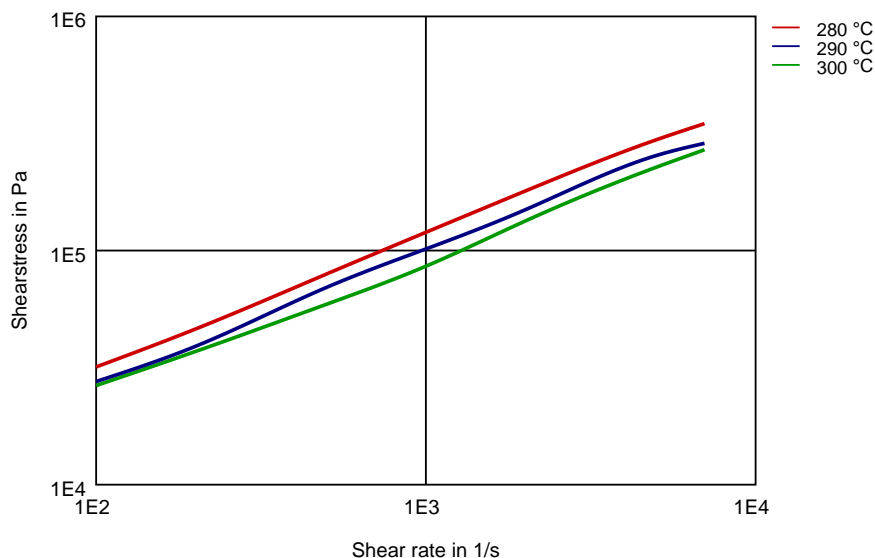
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### Diagrams

#### Viscosity-shear rate



#### Shearstress-shear rate



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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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