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	2000 / 900	MPa	ISO 527-1/-2
Yield stress	50 / 43	MPa	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%	55 / -	MPa	ISO 178
Tensile creep modulus			ISO 899-1
1h	* / 1200	MPa	
1000h	* / 750	MPa	
Charpy impact strength			ISO 179/1eU
73°F	N / N	kJ/m²	
-22°F	N / N	kJ/m²	
Charpy notched impact strength			ISO 179/1eA
73°F	80 / 115	kJ/m²	
-22°F	18 / 17	kJ/m²	
-40°F	- / 15	kJ/m²	
Izod notched impact strength			ISO 180/1A
73°F	80 / 100	kJ/m²	
-22°F	19 / 19	kJ/m²	
-40°F	14 / 14	kJ/m²	
Ball indentation hardness, H 358/30	104 / -	MPa	ISO 2039-1
Thermal properties	**dry / cond**	**Unit**	**Test Standard**
Melting temperature, 18°F/min	263 / *	°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	64 / *	°C	
65 psi	132 / *	°C	
Coeff. of linear therm. expansion, parallel	120 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	90 / *	E-6/K	ISO 11359-1/-2

To find out more, visit DuPont Performance Polymers or contact nearest DuPont location.

North America **Asia Pacific** **Europe/Middle East/Africa**

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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	
RTI, strength			UL 746B
30mil	85	°C	
60mil	85 / *	°C	
120mil	85	°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	0.81 / *	mm	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	725 / -	°C	
60mil	675 / -	°C	
120mil	650 / -	°C	
Glow Wire Ignition Temperature			IEC 60695-2-13
30mil	675 / -	°C	
60mil	675 / -	°C	
120mil	675 / -	°C	
Flammability, 3.0mm	HB / *	-	IEC 60695-11-10
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	26	mm/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	31 / -	kV/mm	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	1080 / -	kg/m³	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	≥80	°C	-
Drying Time, Dehumidified Dryer	2 - 4	h	-
Processing Moisture Content	≤0.2	%	-
Melt Temperature Optimum	290	°C	-
Min. melt temperature	280	°C	-

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

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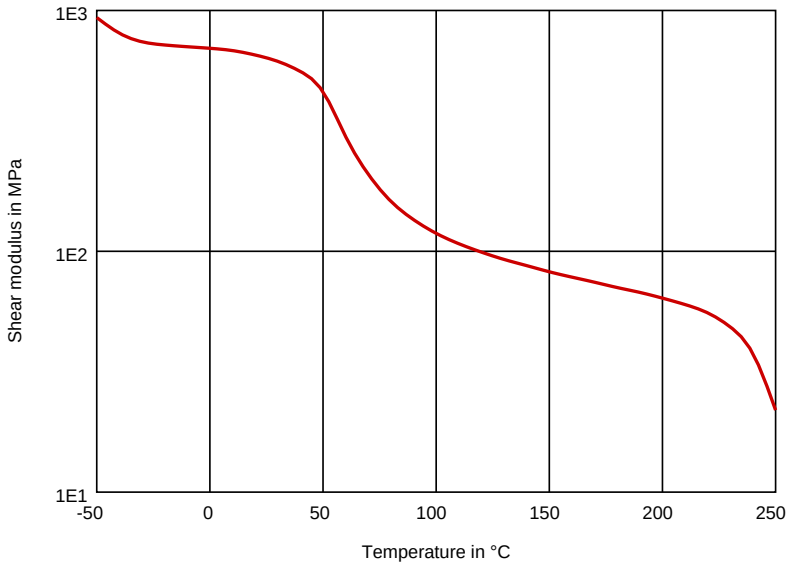
Diagrams

Dynamic Shear modulus-temperature (dry)



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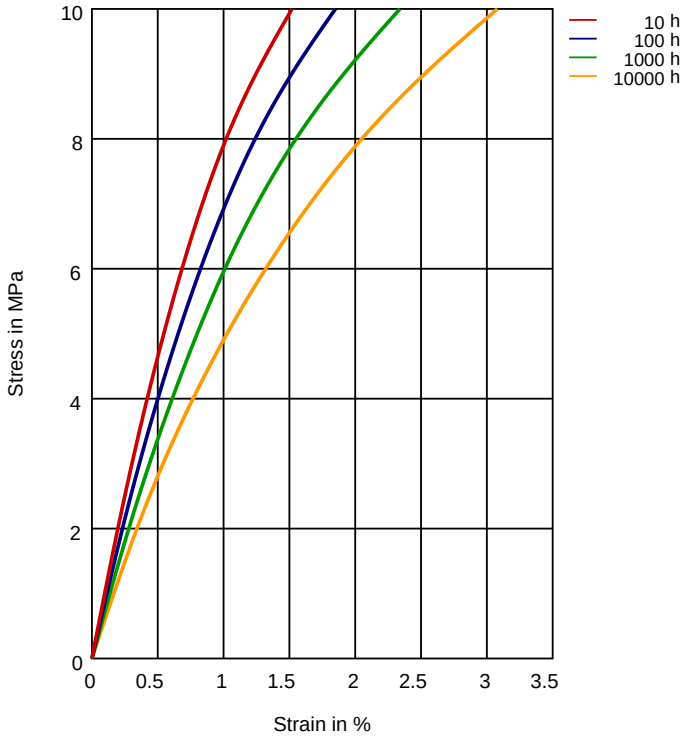
Stress-strain (isochronous) 23°C(cond.)



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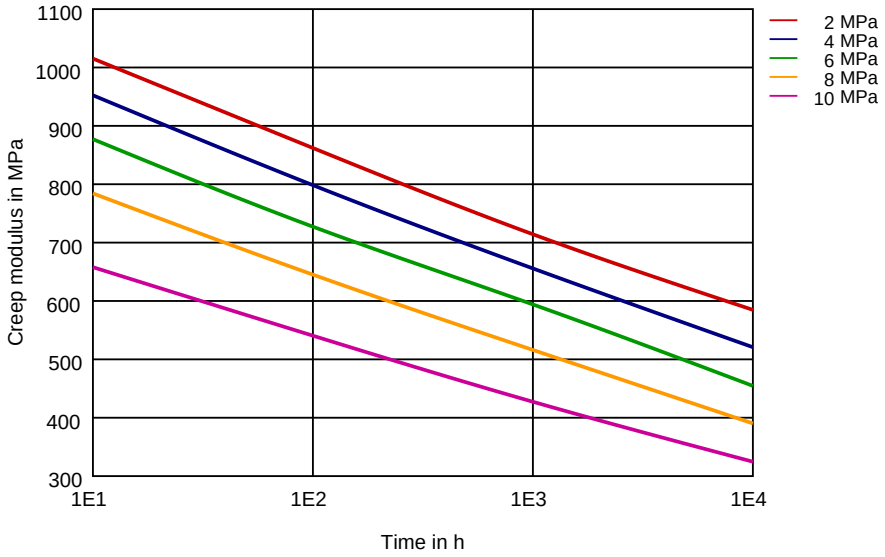
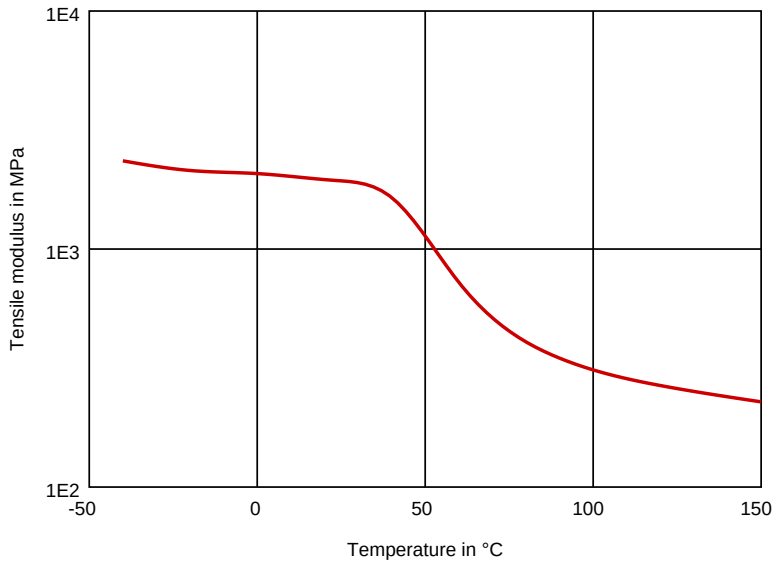
Creep modulus-time 23°C(cond.)



Tensile modulus-temperature (dry)



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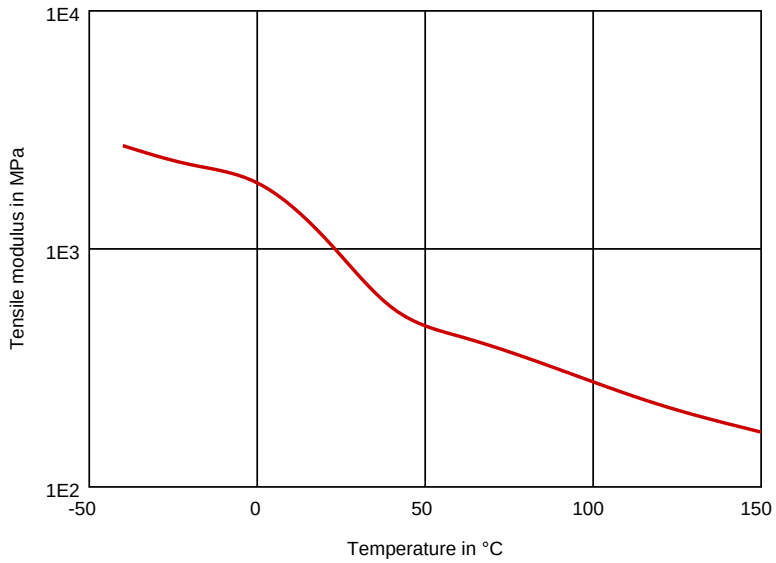
Tensile modulus-temperature (cond.)



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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)
- ✗ 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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