

# DuPont™ Zytel® 153HSL NC010

## NYLON RESIN

### Product Information

DuPont™ Zytel® LCPA long chain polyamide resins provide an innovative and growing portfolio of flexible polymers with excellent thermal, chemical, and hydrolysis resistance. The diverse selection of Zytel® LCPA grades is targeted for a range of performance characteristics, balancing temperature resistance, flexibility and low permeation.

**Zytel® 153HSL NC010 is a heat stabilized, lubricated polyamide 612 resin for molding and extrusion.**

General information	Value	Unit	Test Standard
Resin Identification	PA612	-	ISO 1043
Part Marking Code	PA612	-	ISO 11469
Rheological properties	dry / cond	Unit	Test Standard
Viscosity number	115 <sup>(1)</sup> / *	cm <sup>3</sup> /g	ISO 307, 1157, 1628
Molding shrinkage, parallel	1.3 / -	%	ISO 294-4, 2577
Molding shrinkage, normal	1.4 / -	%	ISO 294-4, 2577
1: sulphuric acid 96%			
Mechanical properties (TPE)	dry / cond	Unit	Test Standard
Abrasion resistance	6 / *	mm <sup>3</sup>	ISO 4649
Mechanical properties	dry / cond	Unit	Test Standard
Tensile Modulus	2400 / 1600	MPa	ISO 527-1/-2
Yield stress	62 / 54	MPa	ISO 527-1/-2
Yield strain	4.4 / 19	%	ISO 527-1/-2
Nominal strain at break	30 / >50	%	ISO 527-1/-2
Flexural Modulus	2100 / 1450	MPa	ISO 178
Charpy impact strength			ISO 179/1eU
73 °F	N / N	kJ/m <sup>2</sup>	
-22 °F	N / N	kJ/m <sup>2</sup>	
Charpy notched impact strength			ISO 179/1eA
73 °F	4 / 7	kJ/m <sup>2</sup>	
-22 °F	5 / 4	kJ/m <sup>2</sup>	
Izod notched impact strength			ISO 180/1A
73 °F	4 / 6	kJ/m <sup>2</sup>	
-22 °F	5 / 5	kJ/m <sup>2</sup>	
Coefficient of static friction, against steel	- / 0.24	-	ASTM 1894
Coefficient of sliding friction, 1h against steel	- / 0.31	-	ASTM 1894
Thermal properties	dry / cond	Unit	Test Standard
Melting temperature, 18 °F/min	218 / *	°C	ISO 11357-1/-3
Temp. of deflection under load			ISO 75-1/-2
260 psi	62 / *	°C	
65 psi	135 / *	°C	
Vicat softening temperature, 90 °F/h, 11 lbf	180 / *	°C	ISO 306
Coeff. of linear therm. expansion, parallel	120 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion			ISO 11359-1/-2
normal	120 / *	E-6/K	
Normal, -40-23 °C	90 / *	E-6/K	
Normal, 55-160 °C	180 / *	E-6/K	
Parallel, -40-23 °C	90 / *	E-6/K	
Parallel, 55-160 °C	170 / *	E-6/K	
Eff. thermal diffusivity	7E-8	m <sup>2</sup> /s	-
RTI, electrical			UL 746B
30mil	105 / *	°C	
60mil	105 / *	°C	
120mil	105	°C	

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

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RTI, impact			UL 746B
30mil	65	°C	
60mil	65 / *	°C	
120mil	65	°C	
RTI, strength			UL 746B
30mil	65	°C	
60mil	65 / *	°C	
120mil	65	°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	0.86 / *	mm	IEC 60695-11-10
UL recognition	yes / *	-	UL 94
Oxygen index	27 / *	%	ISO 4589-1/-2
Glow Wire Flammability Index			IEC 60695-2-12
30mil	825 / -	°C	
60mil	775 / -	°C	
120mil	925 / -	°C	
Glow Wire Ignition Temperature			IEC 60695-2-13
30mil	700 / -	°C	
60mil	700 / -	°C	
120mil	700 / -	°C	
Flammability, 3.0mm	HB / *	-	IEC 60695-11-10
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 60250
100Hz	3.6 / 5.3	-	
1MHz	3.2 / 3.4	-	
Dissipation factor			IEC 60250
100Hz	140 / 1000	E-4	
1MHz	160 / 400	E-4	
Volume resistivity	1E13 / 1E11	Ohm*m	IEC 60093
Surface resistivity	* / 1E12	Ohm	IEC 60093
Electric strength	30 / 30	kV/mm	IEC 60243-1
Comparative tracking index	600 / -	-	IEC 60112
Electric Strength, Short Time, 2mm	22.6 / 21.7	kV/mm	IEC 60243-1
<b>Other properties</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
Humidity absorption, 80mil	1.3 / *	%	Sim. to ISO 62
Water absorption, 80mil	3 / *	%	Sim. to ISO 62
Density	1060 / -	kg/m <sup>3</sup>	ISO 1183
<b>Film Properties</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
Strain at yield, parallel	4.4 / *	%	ISO 527-3
<b>Injection</b>	<b>Value</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	≤0.15	%	-
Melt Temperature Optimum	250	°C	-
Min. melt temperature	230	°C	-
Max. melt temperature	290	°C	-
Mold Temperature Optimum	70	°C	-
Min. mold temperature	50	°C	-
Max. mold temperature	90	°C	-

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## NYLON RESIN

Extrusion	Value	Unit	Test Standard
Drying Temperature	75 - 80	°C	-
Drying Time, Dehumidified Dryer	3 - 4	h	-
Melt Temperature Optimum	240	°C	-
Melt Temperature Range	235 - 250	°C	-

Characteristics			
Processing	• Injection Molding	• Other Extrusion	
Delivery form	• Pellets		
Additives	• Lubricants		
Special characteristics	• Heat stabilized or stable to heat		
Regional Availability	• North America • Europe	• Asia Pacific • South and Central America	• Near East/Africa • Global

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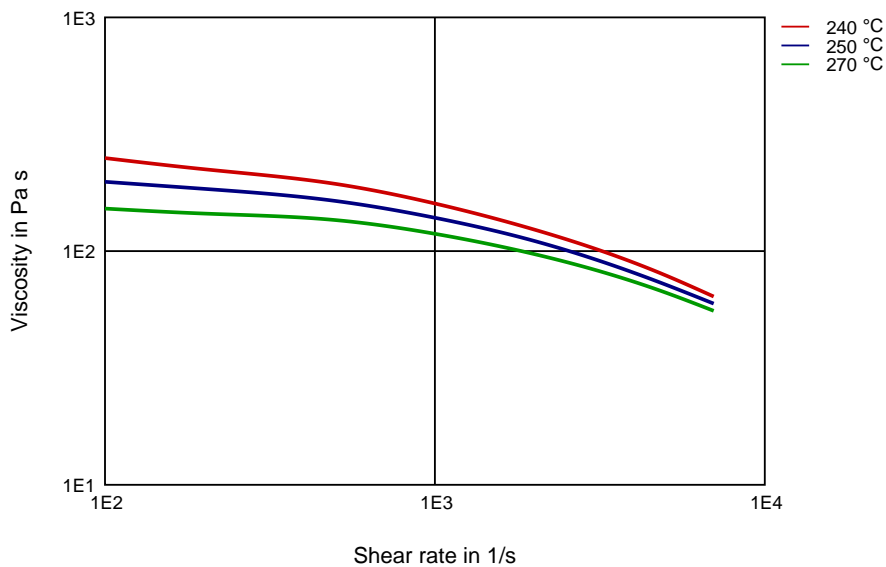


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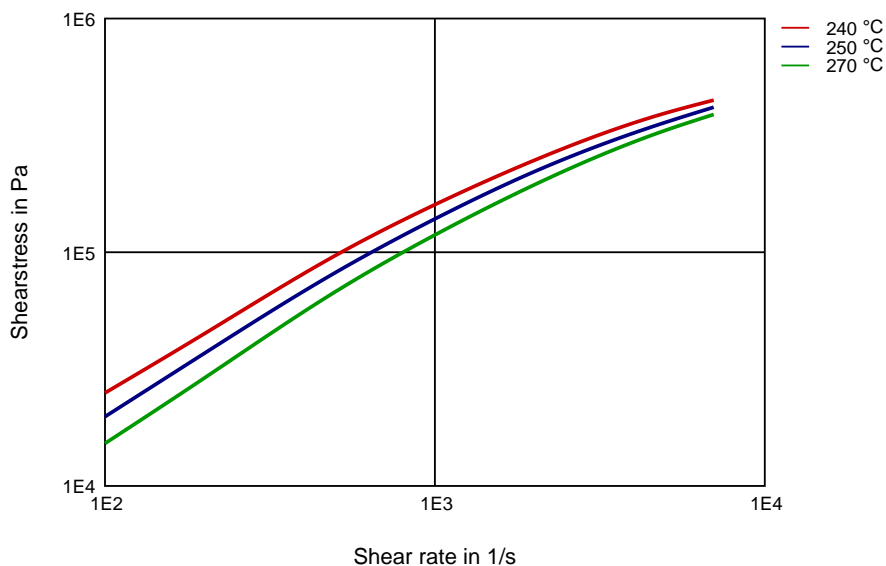
## NYLON RESIN

### Diagrams

#### Viscosity-shear rate



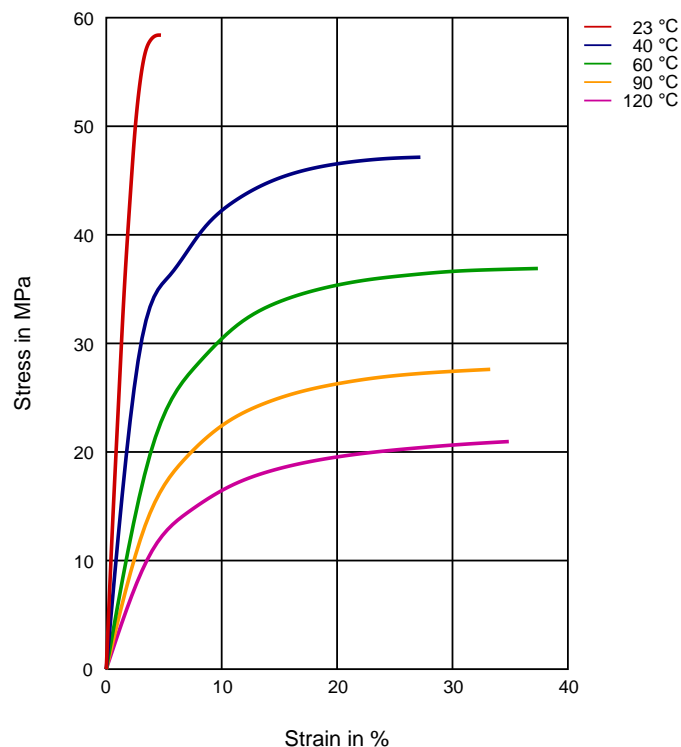
#### Shearstress-shear rate



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Stress-strain (dry)



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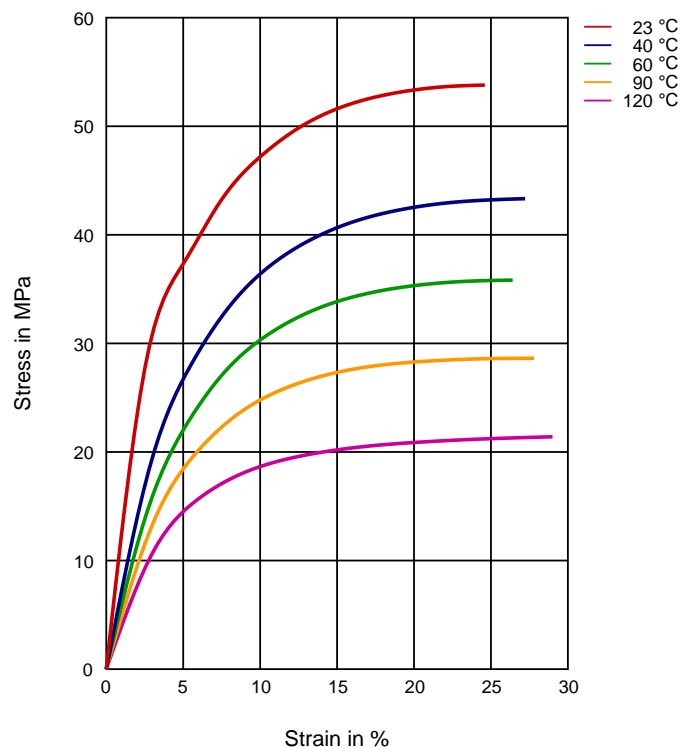
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## NYLON RESIN

Stress-strain (cond.)



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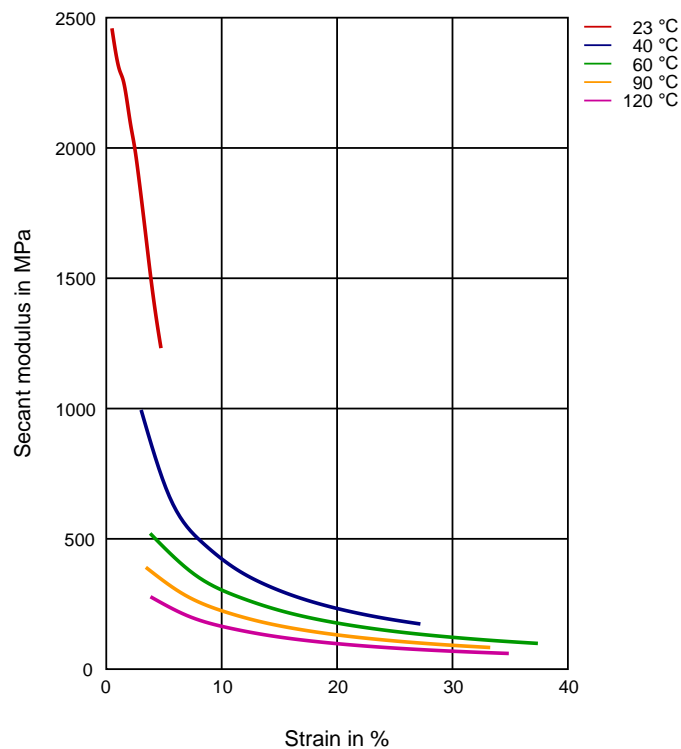
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## NYLON RESIN

Secant modulus-strain (dry)



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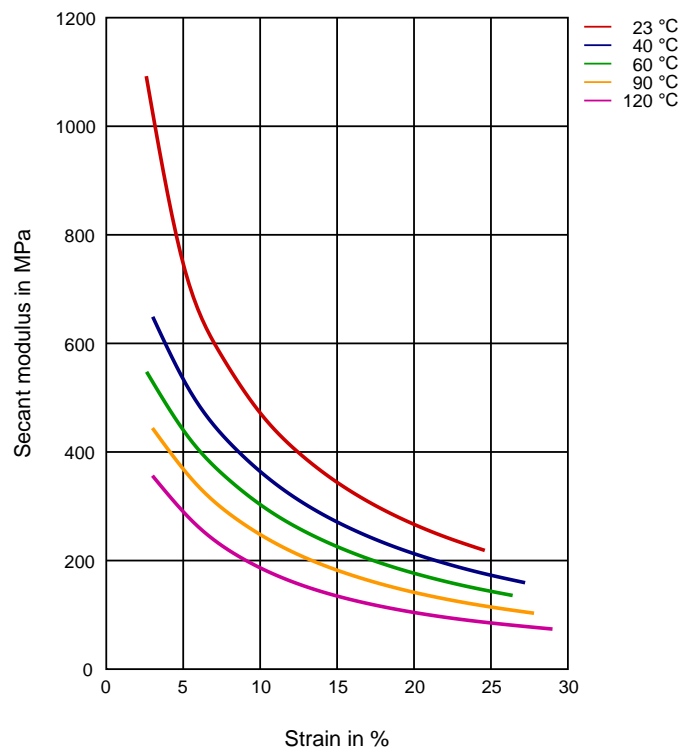
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# DuPont™ Zytel® 153HSL NC010

## NYLON RESIN

Secant modulus-strain (cond.)



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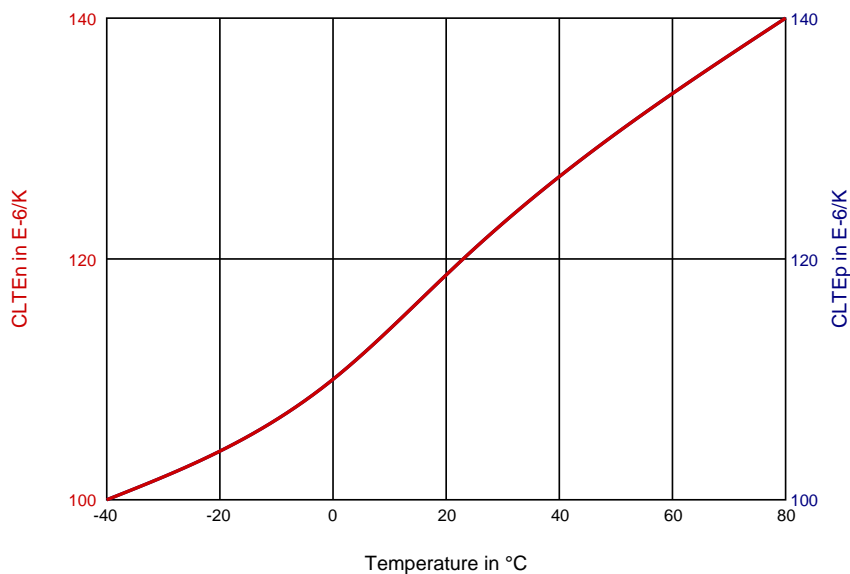




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## NYLON RESIN

Coeff. of linear thermal expansion, normal



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### Chemical Media Resistance

#### Other

- ✓ Water (23°C)
- ✗ Water (90°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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