

# DuPont™ Zytel® 77G33L 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® 77G33L NC010 is a 33% glass fiber reinforced polyamide 612 resin for injection molding.**

General information	Value	Unit	Test Standard
Resin Identification	PA612-GF33	-	ISO 1043
Part Marking Code	PA612-GF33	-	ISO 11469
Rheological properties	dry / cond	Unit	Test Standard
Viscosity number	100 / *	cm <sup>3</sup> /g	ISO 307, 1157, 1628
Molding shrinkage, parallel	0.3 / -	%	ISO 294-4, 2577
Molding shrinkage, normal	0.9 / -	%	ISO 294-4, 2577
Mold Shrinkage, Flow, 3.2mm (0.125in)	0.2 / *	%	-
Mold Shrinkage, Transverse, 3.2mm (0.125in)	1 / *	%	-
Mechanical properties	dry / cond	Unit	Test Standard
Tensile Modulus	9500 / 7900	MPa	ISO 527-1/-2
Stress at break	170 / 140	MPa	ISO 527-1/-2
Strain at break	3.2 / 3.2	%	ISO 527-1/-2
Flexural Modulus	8500 / 7000	MPa	ISO 178
Flexural Strength	260 / -	MPa	ISO 178
Compressive strength	160 / -	MPa	ISO 604
Shear Strength	75 / -	MPa	ASTM D 732
Charpy impact strength			ISO 179/1eU
73 °F	80 / 90	kJ/m <sup>2</sup>	
-22 °F	60 / 65	kJ/m <sup>2</sup>	
Charpy notched impact strength			ISO 179/1eA
73 °F	13 / 12	kJ/m <sup>2</sup>	
-22 °F	11 / 10	kJ/m <sup>2</sup>	
-40 °F	12 / 10	kJ/m <sup>2</sup>	
Izod notched impact strength			ISO 180/1A
73 °F	13 / 12	kJ/m <sup>2</sup>	
-22 °F	11 / 10	kJ/m <sup>2</sup>	
-40 °F	11 / 10	kJ/m <sup>2</sup>	
Izod impact strength			ISO 180/1U
73 °F	70 / 60	kJ/m <sup>2</sup>	
-22 °F	60 / 45	kJ/m <sup>2</sup>	
Coefficient of static friction, against steel	- / 0.28	-	ASTM 1894
Coefficient of sliding friction, 1h against steel	- / 0.34	-	ASTM 1894
Thermal properties	dry / cond	Unit	Test Standard
Melting temperature, 18 °F/min	218 / *	°C	ISO 11357-1/-3
Glass transition temperature, 18 °F/min	65 / 55	°C	ISO 11357-1/-2
Temp. of deflection under load			ISO 75-1/-2
260 psi	200 / *	°C	
65 psi	216 / *	°C	
Coeff. of linear therm. expansion, parallel	20 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion			ISO 11359-1/-2
normal	110 / *	E-6/K	
Normal, -40-23 °C	83 / *	E-6/K	
Normal, 55-160 °C	160 / *	E-6/K	
Parallel, -40-23 °C	26 / *	E-6/K	
Parallel, 55-160 °C	14 / *	E-6/K	

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

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Europe/Middle East/Africa

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Thermal conductivity of melt	0.26	W/(m K)	-
Spec. heat capacity of melt	2130	J/(kg K)	-
Eff. thermal diffusivity	7.5E-8	m <sup>2</sup> /s	-
RTI, electrical			UL 746B
30mil	105 / *	°C	
60mil	120 / *	°C	
120mil	120	°C	
RTI, strength			UL 746B
60mil	120 / *	°C	
120mil	120	°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	0.7 / *	mm	IEC 60695-11-10
UL recognition	yes / *	-	UL 94
Oxygen index	23 / *	%	ISO 4589-1/-2
Glow Wire Flammability Index			IEC 60695-2-12
30mil	675 / -	°C	
60mil	675 / -	°C	
120mil	700 / -	°C	
Glow Wire Ignition Temperature			IEC 60695-2-13
30mil	700 / -	°C	
60mil	700 / -	°C	
120mil	725 / -	°C	
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	23	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	4.1 / -	-	
1MHz	3.7 / -	-	
Dissipation factor			IEC 62631-2-1
100Hz	135 / -	E-4	
1MHz	200 / -	E-4	
Volume resistivity	1E13 / 1E10	Ohm*m	IEC 62631-3-1
Surface resistivity	* / 1E12	Ohm	IEC 62631-3-2
Electric strength	33 / 30	kV/mm	IEC 60243-1
Comparative tracking index	600 / -	-	IEC 60112
Electric Strength, Short Time, 2mm	27 / -	kV/mm	IEC 60243-1
<b>Other properties</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
Humidity absorption, 80mil	0.7 / *	%	Sim. to ISO 62
Water absorption, 80mil	1.8 / *	%	Sim. to ISO 62
Density	1320 / -	kg/m <sup>3</sup>	ISO 1183
Water Absorption, Immersion 24h	0.3 / *	%	Sim. to ISO 62
<b>VDA Properties</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
Fogging, G-value (condensate)	0.1 / *	mg	ISO 6452
<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	0.2 / *	m/s	-

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Mold Temperature Optimum	100	°C	-
Min. mold temperature	70	°C	-
Max. mold temperature	120	°C	-
Hold pressure range	50 - 100	MPa	-
Hold pressure time	3	s/mm	-
Ejection temperature	210	°C	-

### Characteristics

Processing	• Injection Molding		
Delivery form	• Pellets		
Additives	• Lubricants	• Release agent	
Regional Availability	• North America • Europe	• Asia Pacific • South and Central America	• Near East/Africa • Global

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#### North America

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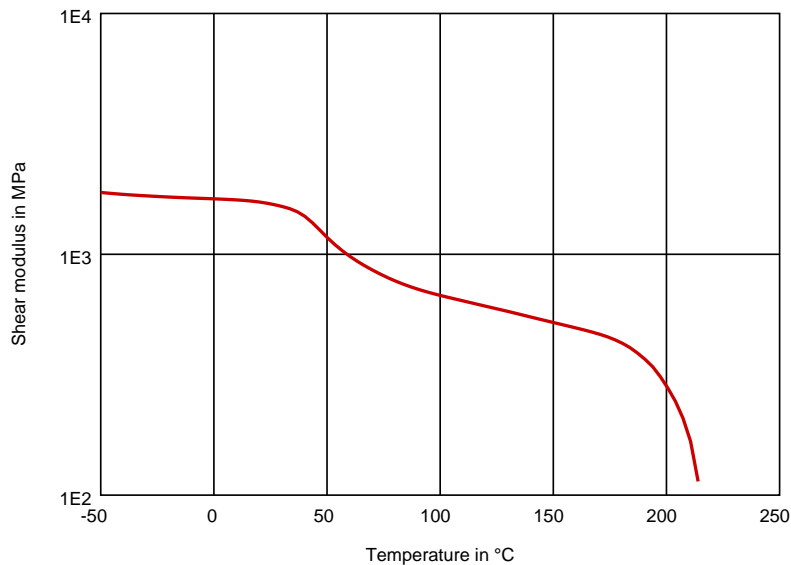


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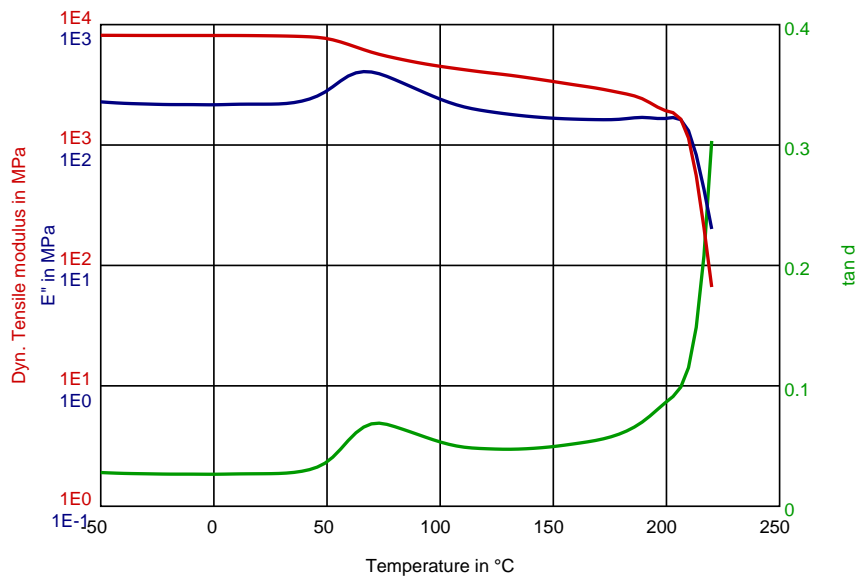
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### Diagrams

#### Dynamic Shear modulus-temperature (dry)



#### Dynamic Tensile modulus-temperature (dry)



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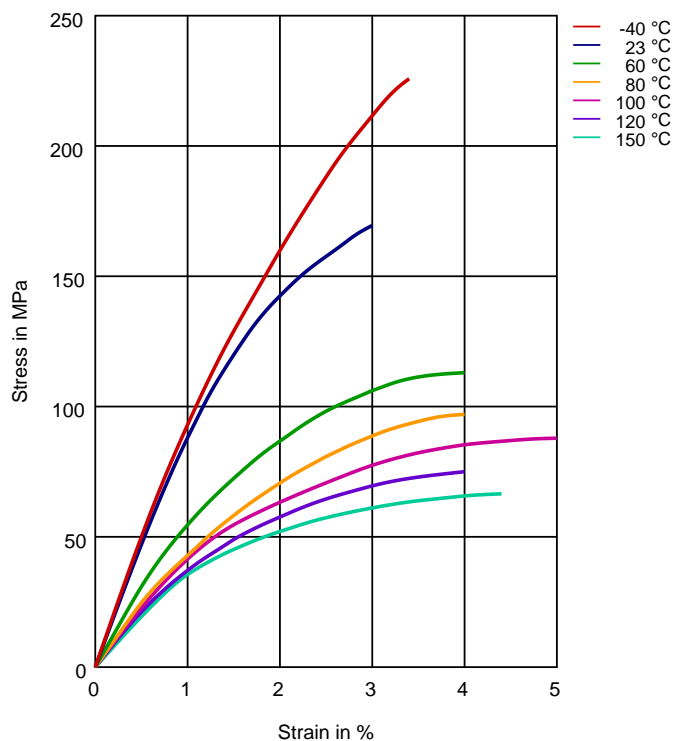
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# DuPont™ Zytel® 77G33L NC010

## NYLON RESIN

Stress-strain (dry)



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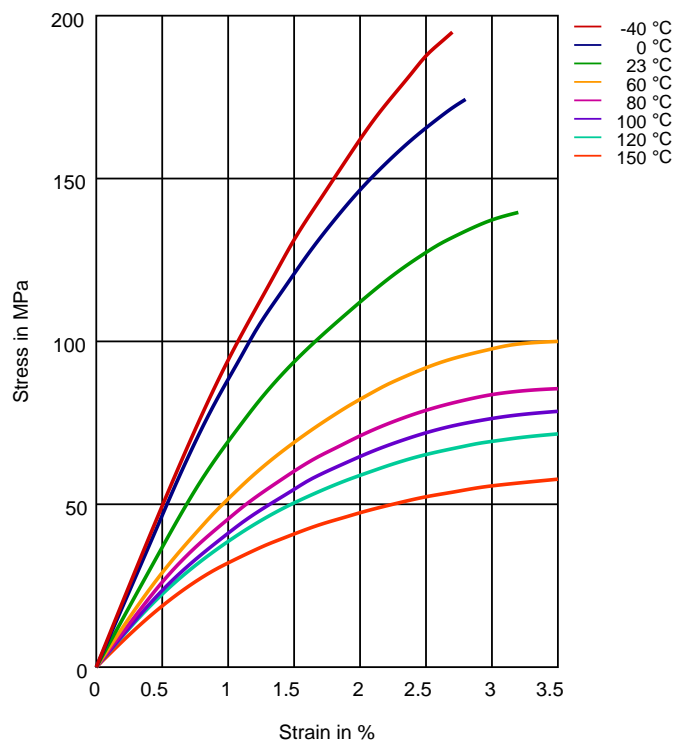
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## NYLON RESIN

Stress-strain (cond.)



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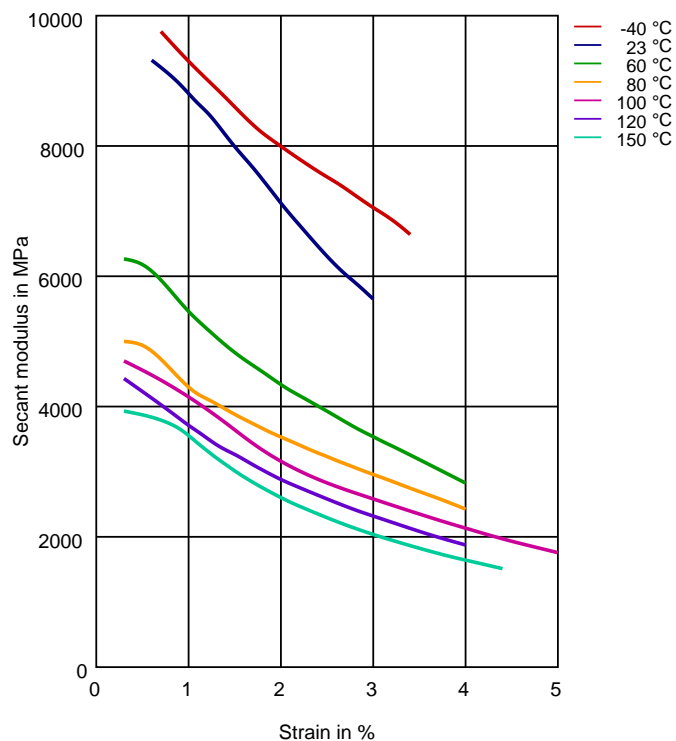
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## NYLON RESIN

Secant modulus-strain (dry)



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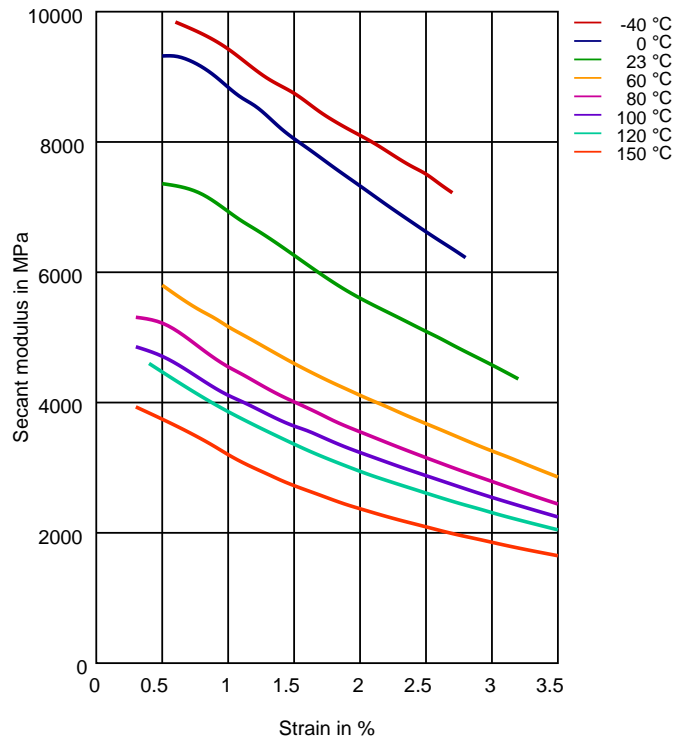
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Secant modulus-strain (cond.)



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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