

CAMPUS® Datasheet



Zytel® 103HSL NC010 - PA66 DuPont Engineering Polymers

Product Texts

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® 103HSL NC010 is a heat stabilized, lubricated polyamide 66 resin for injection molding.

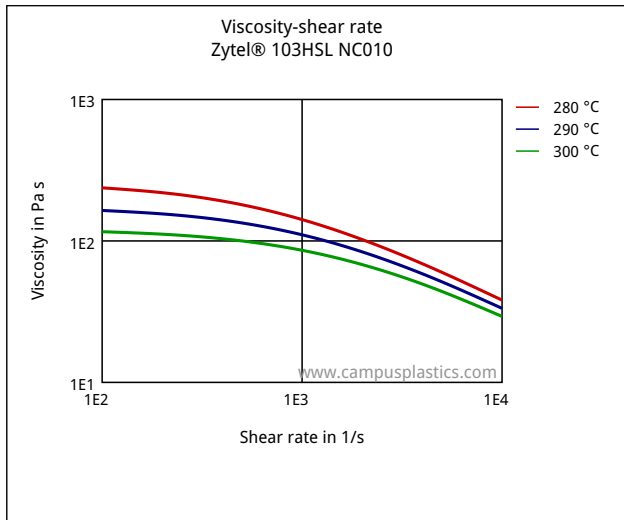
Rheological properties	dry / cond	Unit	Test Standard
Molding shrinkage, parallel	1.3 / *	%	ISO 294-4, 2577
Molding shrinkage, normal	1.3 / *	%	ISO 294-4, 2577
Mechanical properties	dry / cond	Unit	Test Standard
Tensile modulus	3100 / 1400	MPa	ISO 527-1/-2
Yield stress	85 / 55	MPa	ISO 527-1/-2
Yield strain	4.5 / 25	%	ISO 527-1/-2
Nominal strain at break	20 / >50	%	ISO 527-1/-2
Tensile creep modulus, 1h	* / 1200	MPa	ISO 899-1
Tensile creep modulus, 1000h	* / 650	MPa	ISO 899-1
Charpy impact strength, +23°C	N / N	kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	400 / N	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, +23°C	5.5 / 12	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	4.5 / 3.5	kJ/m ²	ISO 179/1eA
Thermal properties	dry / cond	Unit	Test Standard
Melting temperature, 10°C/min	262 / *	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	60 / *	°C	ISO 11357-1/-2
Temp. of deflection under load, 1.80 MPa	70 / *	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	200 / *	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	240 / *	°C	ISO 306
Coeff. of linear therm. expansion, parallel	100 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	110 / *	E-6/K	ISO 11359-1/-2
Burning Behav. at 1.5 mm nom. thickn.	V-2 / *	class	IEC 60695-11-10
Thickness tested (1.5)	1.5 / *	mm	IEC 60695-11-10
Yellow Card available	Yes / *	-	-
Burning Behav. at thickness h	V-2 / *	class	IEC 60695-11-10
Thickness tested (h)	0.7 / *	mm	IEC 60695-11-10
Yellow Card available	Yes / *	-	-
FMVSS	SE	-	ISO 3795 (FMVSS 302)
Oxygen index	28 / *	%	ISO 4589-1/-2
Electrical properties	dry / cond	Unit	Test Standard
Relative permittivity, 100Hz	3.8 / 12.8	-	IEC 62631-2-1
Relative permittivity, 1MHz	3.5 / 4	-	IEC 62631-2-1
Dissipation factor, 100Hz	75 / 5800	E-4	IEC 62631-2-1

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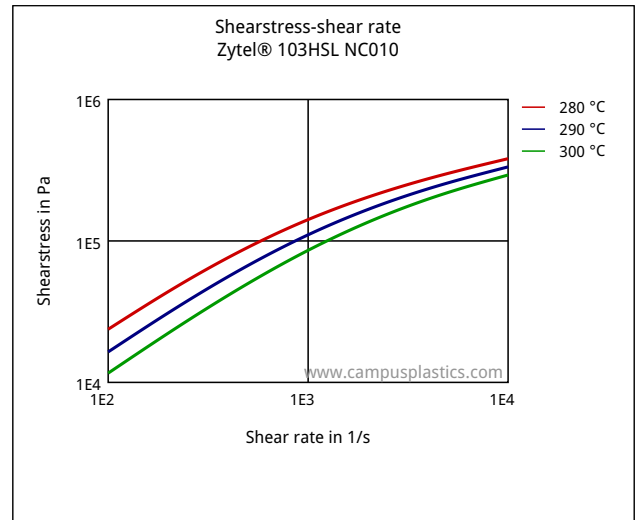
Dissipation factor, 1MHz	165 / 700	E-4	IEC 62631-2-1
Volume resistivity	1E13 / 1E11	Ohm*m	IEC 62631-3-1
Electric strength	31 / 28	kV/mm	IEC 60243-1
Comparative tracking index	600 / -	-	IEC 60112
Other properties	dry / cond	Unit	Test Standard
Water absorption	8.5 / *	%	Sim. to ISO 62
Humidity absorption	2.6 / *	%	Sim. to ISO 62
Density	1140 / -	kg/m ³	ISO 1183
Material specific properties	dry / cond	Unit	Test Standard
Viscosity number	150 / *	cm ³ /g	ISO 307, 1157, 1628
Film Properties	dry / cond	Unit	Test Standard
Strain at yield, parallel	4.5 / *	%	ISO 527-3
Rheological calculation properties	Value	Unit	Test Standard
Density of melt	980	kg/m ³	-
Thermal conductivity of melt	0.16	W/(m K)	-
Spec. heat capacity melt	2790	J/(kg K)	-
Eff. thermal diffusivity	5E-8	m ² /s	-
Ejection temperature	190	°C	-

Diagrams

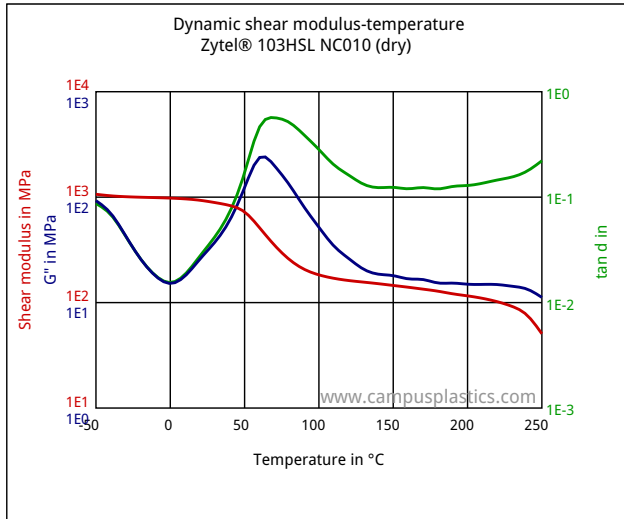
Viscosity-shear rate



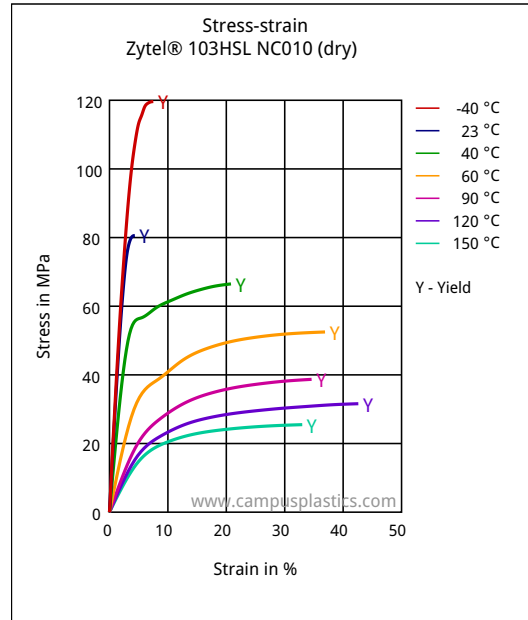
Shearstress-shear rate



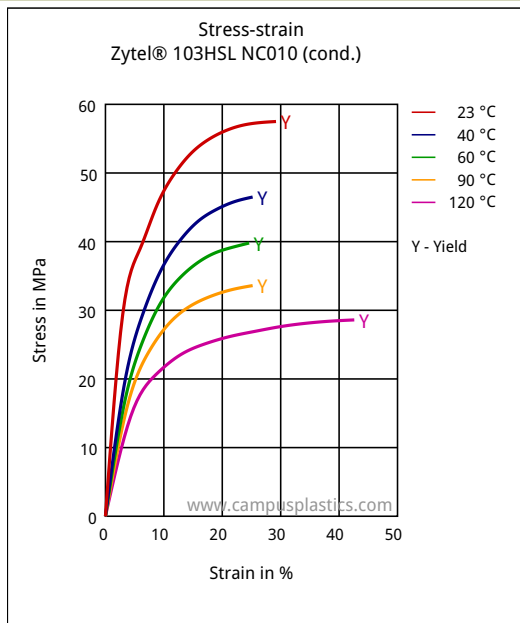
Dynamic shear modulus-temperature



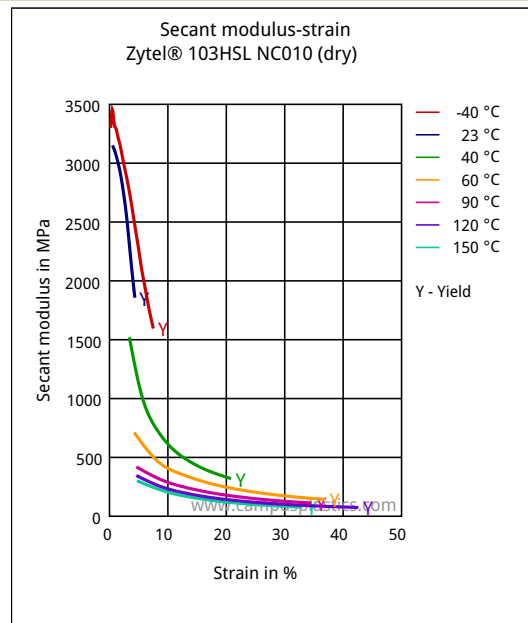
Stress-strain



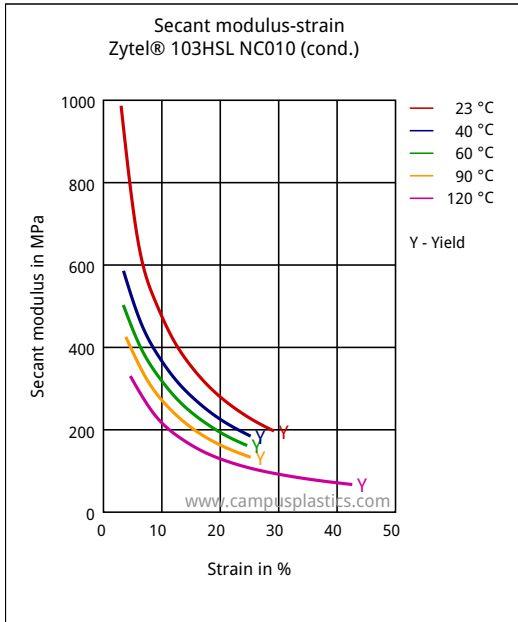
Stress-strain



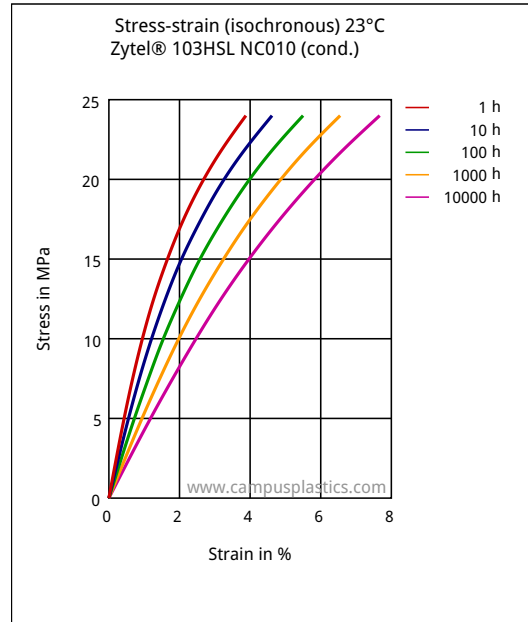
Secant modulus-strain



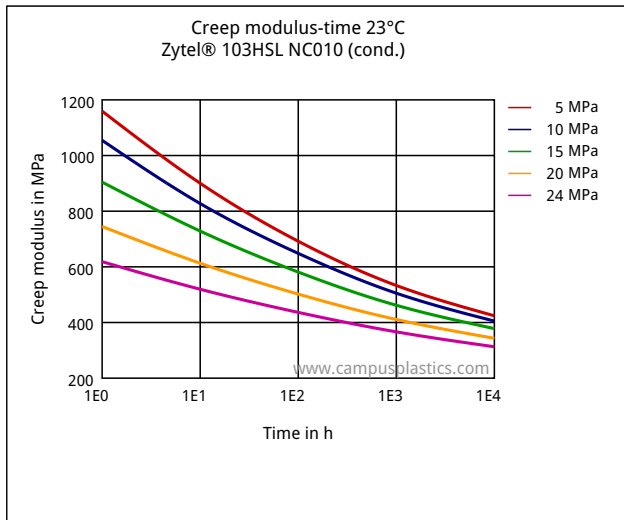
Secant modulus-strain



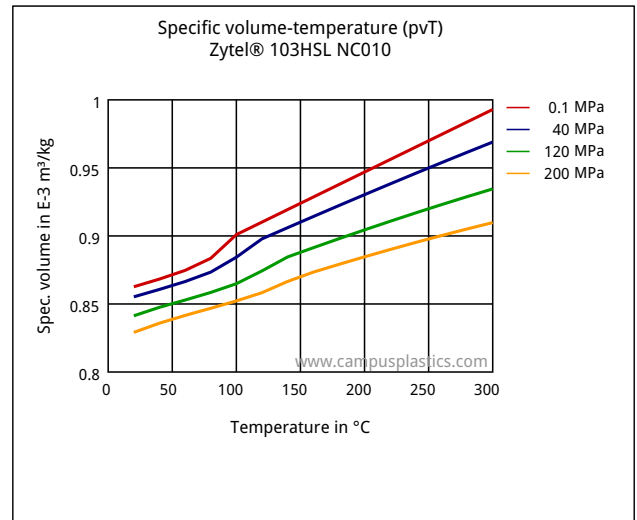
Stress-strain (isochronous) 23°C



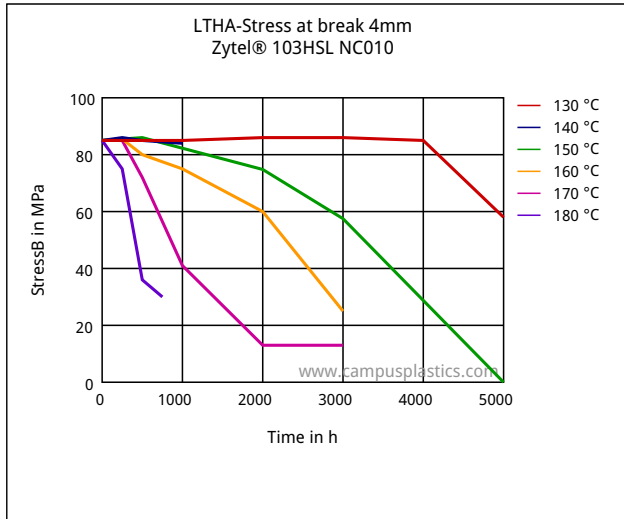
Creep modulus-time 23°C



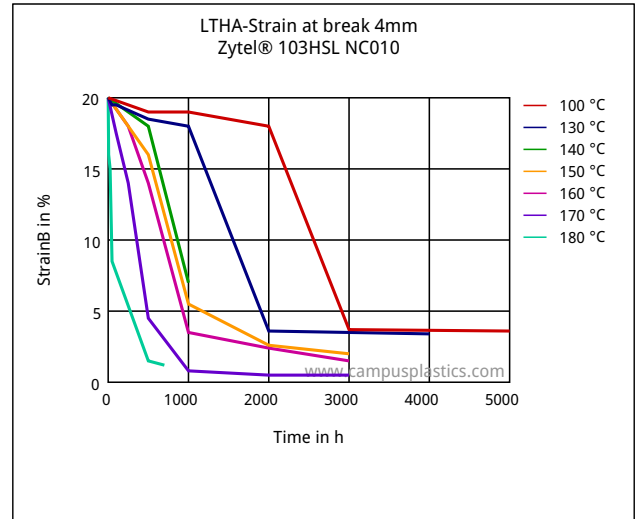
Specific volume-temperature (pvT)



LTHA-Stress at break 4mm



LTHA-Strain at break 4mm



Characteristics

Processing

Injection Molding, Other Extrusion, Coating

Delivery form

Pellets

Additives

Lubricants, Release agent

Special Characteristics

Heat stabilized or stable to heat

Regional Availability

North America, Europe, Asia Pacific, South and Central America, Near East/Africa

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)

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- ☺ 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)
- ☹ Motor oil OS206 304 Ref.Eng.Oil, ISP (135°C)
- ☹ Automatic hypoid-gear oil Shell Donax TX (135°C)

Standard Fuels

- ☺ ISO 1817 Liquid 1 (60°C)
- ☺ ISO 1817 Liquid 2 (60°C)
- ☺ ISO 1817 Liquid 3 (60°C)
- ☺ ISO 1817 Liquid 4 (60°C)
- ☺ Standard fuel without alcohol (pref. ISO 1817 Liquid C) (23°C)
- ☺ Standard fuel with alcohol (pref. ISO 1817 Liquid 4) (23°C)
- ☺ 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)
- ☹ Deionized water (90°C)
- ☹ Phenol solution (5% by mass) (23°C)

All data provided according to ISO 10350 for single points and ISO 11403 for multipoints.

Contact DuPont for Material Safety Data Sheet, general guides and/or additional information about ventilation, handling, purging, drying, etc.

Test temperatures are 23°C unless otherwise stated.

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