Zytel® ST801 NC010

NYLON RESIN

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, we recommend, 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 NC010 is an Unreinforced, Super Toughened, Polyamide 66

Product information

Resin Identification	PA66-HI	ISO 1043
Part Marking Code	>PA66-HI<	ISO 11469
ISO designation	ISO 16396-PA66-I,,M1G1L1NR,S14-020	
Infrared spectrum	available	

Rheological properties

	dry/cond.		
Molding shrinkage, parallel	1.8 / -	%	ISO 294-4, 2577
Molding shrinkage, normal	1.4 / -	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile modulus	290000 / 131000	psi	ISO 527-1/-2
Tensile stress at yield, 50mm/min	7300 / 6200	psi	ISO 527-1/-2
Tensile strain at yield, 50mm/min	5.7 / 37	%	ISO 527-1/-2
Nominal strain at break	40 / >50	%	ISO 527-1/-2
Flexural modulus	261000 / 102000	psi	ISO 178
Flexural strength	9860 / -	psi	ISO 178
Charpy impact strength, 23°C	N / N	ftlb/in²	ISO 179/1eU
Charpy impact strength, -30°C	N / N	ftlb/in²	ISO 179/1eU
Charpy notched impact strength, 23°C	38.1 / 54.7	ftlb/in²	ISO 179/1eA
Charpy notched impact strength, -30°C	8.56 / 8.09	ftlb/in²	ISO 179/1eA
Izod notched impact strength, 23°C	38.1 / 42.8	ftlb/in²	ISO 180/1A
Izod notched impact strength, -30°C	9.51 / 9.51	ftlb/in²	ISO 180/1A
Hardness, Rockwell, R-scale	112 / 89		ISO 2039-2

Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	505 / *	°F	ISO 11357-1/-3
Glass transition temperature, 10°C/min	167 / 68	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	147 / *	°F	ISO 75-1/-2
Temperature of deflection under load, 1.8 MPa, annealed	160 / *	°F	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	270 / *	°F	ISO 75-1/-2
Ball pressure test	428 / -	°F	IEC 60695-10-2

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Coefficient of linear thermal expansion (CLTE), parallel	0.67 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), Parallel, 23-55°C(73-130°F)	0.667 / -	E-4/°F	ASTM E 831
Coefficient of linear thermal expansion (CLTE), parallel, -40-23°C	0.522 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	0.5 / *	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), Normal,23-55°C (73-130°F)	0.5 / -	E-4/°F	ASTM E 831
Coefficient of linear thermal expansion (CLTE), normal, -40-23°C	0.511 / *	E-4/°F	ISO 11359-1/-2
RTI, electrical, 0.75mm	257	°F	UL 746B
RTI, electrical, 1.5mm	257	°F	UL 746B
RTI, electrical, 3.0mm	257	°F	UL 746B
RTI, impact, 0.75mm	167	°F	UL 746B
RTI, impact, 1.5mm	167	°F	UL 746B
RTI, impact, 3.0mm	167	°F	UL 746B
RTI, strength, 0.75mm	185	°F	UL 746B
RTI, strength, 1.5mm	185 / *	°F	UL 746B
RTI, strength, 3.0mm	185	°F	UL 746B
Hot mandrel	0		IEC 60695-10-2

Flammability

	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	HB / *	class	IEC 60695-11-10
Thickness tested	0.0591 / *	in	IEC 60695-11-10
UL recognition	yes / *		UL 94
Burning Behav. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested	0.0319 / *	in	IEC 60695-11-10
UL recognition	yes / *		UL 94
Oxygen index	20 / *	%	ISO 4589-1/-2
Glow Wire Flammability Index, 0.75mm	1380 / -	°F	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm	1380 / -	°F	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	1380 / -	°F	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	1340 / -	°F	IEC 60695-2-13
Glow Wire Ignition Temperature, 1.5mm	1340 / -	°F	IEC 60695-2-13
Glow Wire Ignition Temperature, 3.0mm	1340 / -	°F	IEC 60695-2-13
Hot Wire Ignition, 0.75mm	9 / *	s	UL 746A
Hot Wire Ignition, 1.5mm	15 / *	s	UL 746A
Hot Wire Ignition, 3mm	20 / *	s	UL 746A
FMVSS Class	B		ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	<80	in/min	ISO 3795 (FMVSS 302)

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Electrical properties

	dry/cond.		
Relative permittivity, 100Hz	3.2 / 5.5		IEC 62631-2-1
Relative permittivity, 1MHz	2.9 / 3.2		IEC 62631-2-1
Dissipation factor, 100Hz	80 / 1800	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	140 / 550	E-4	IEC 62631-2-1
Volume resistivity	1E12 / 1E11	Ohm.m	IEC 62631-3-1
Surface resistivity	* / >1E15	Ohm	IEC 62631-3-2
Electric strength	787 / -	kV/in	IEC 60243-1
Comparative tracking index	600 / -		IEC 60112
Arc Resistance	131 / *	s	UL 746B
High Amperage Arc Ignition Resistance, 0.75 mm	200 / *	arcs	UL 746A
High Amperage Arc Ignition Resistance, 1.5 mm	200 / *	arcs	UL 746A
High Amperage Arc Ignition Category, 1.5 mm	200 / *	class	UL 746A
High Voltage Arc Tracking Rate	7.6 / *	in/min	UL 746A

Physical/Other properties

	dry/cond.		
Humidity absorption, 2mm	2 / *	%	Sim. to ISO 62
Water absorption, 2mm	6.5 / *	%	Sim. to ISO 62
Water absorption, Immersion 24h	1.2[1] / *	%	Sim. to ISO 62
Density	0.039 / -	lb/in³	ISO 1183
Density of melt	57.4	lb/ft³	

[1]: 3mm wall thickness

Injection

Drying Recommended	yes	
Drying Temperature	176	°F
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	≤0.2	%
Melt Temperature Optimum	554	°F
Min. melt temperature	536	°F
Max. melt temperature	572	°F
Max. screw tangential speed	≤0.3	m/s
Mold Temperature Optimum	176	°F
Min. mold temperature	122	°F
Max. mold temperature	212	°F
Hold pressure range	7250 - 14500	psi
Hold pressure time	0.102	s/mil
Hold Pressure Time (h is the max. wall thickness of the part in mm)	h^2+2	s
Back pressure	as low as possible	psi
Ejection temperature	374	°F

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Extrusion

Drying Temperature	176	°F
Drying Time, Dehumidified Dryer	3 - 4	h
Processing Moisture Content	≤0.06	%
Melt Temperature Optimum	536	°F
Melt Temperature Range	527 - 554	°F

Automotive

OEM	STANDARD	ADDITIONAL INFORMATION
BMW	GS93016-PA66	(Highly Impact Resistant)
Ford	WSK-M4D666-A	
Hyundai	MS211-46 Type C-2	
Mercedes-Benz	DBL5410.00 PA66-I	
Stellantis - Chrysler	MS.50017 / CPN-2345	Natural
Stellantis - Chrysler	MS.50017 / CPN-2424	Natural
Stellantis - Chrysler	MS.50017 / CPN-2456	Natural

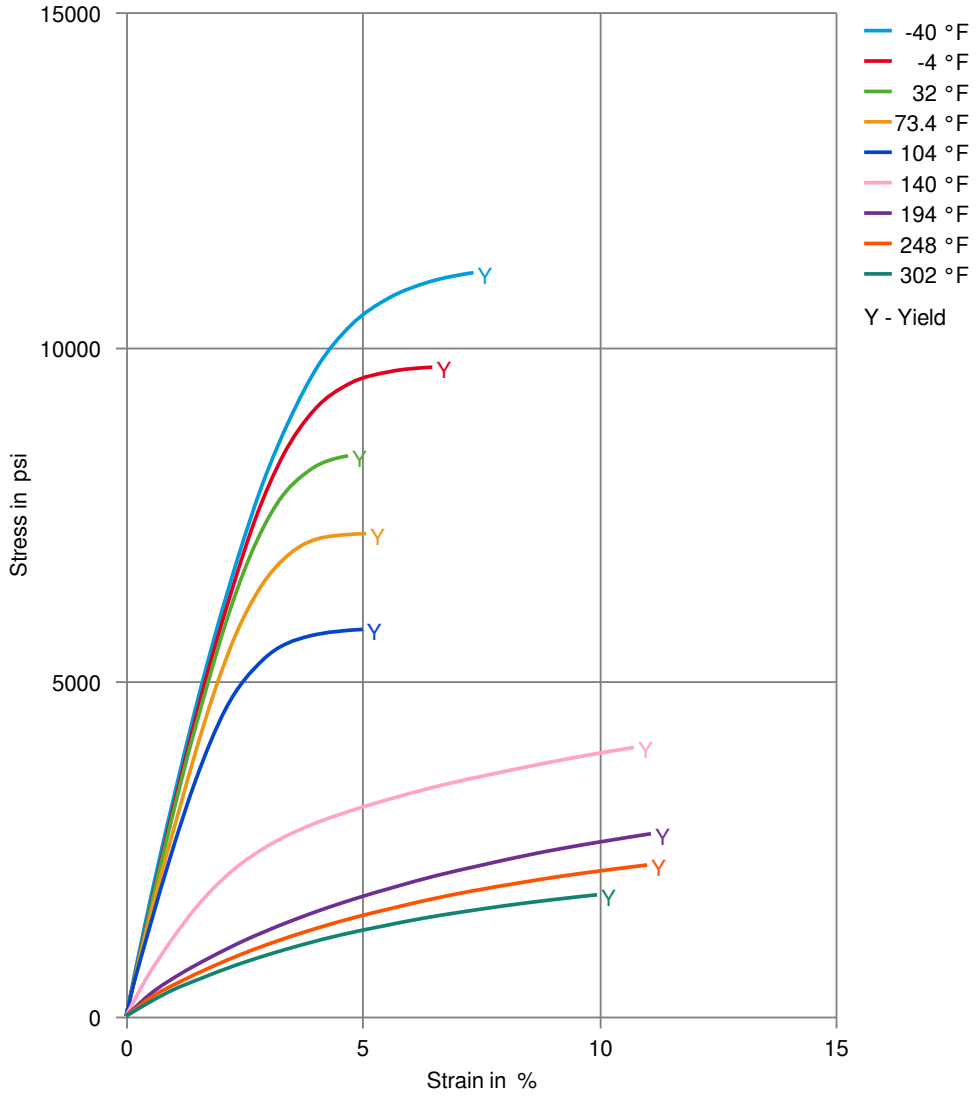
Characteristics

Processing	Injection Molding
Special characteristics	High impact or impact modified

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NYLON RESIN

Stress-strain (dry)
(measured on Zytel® ST801 BK010A)

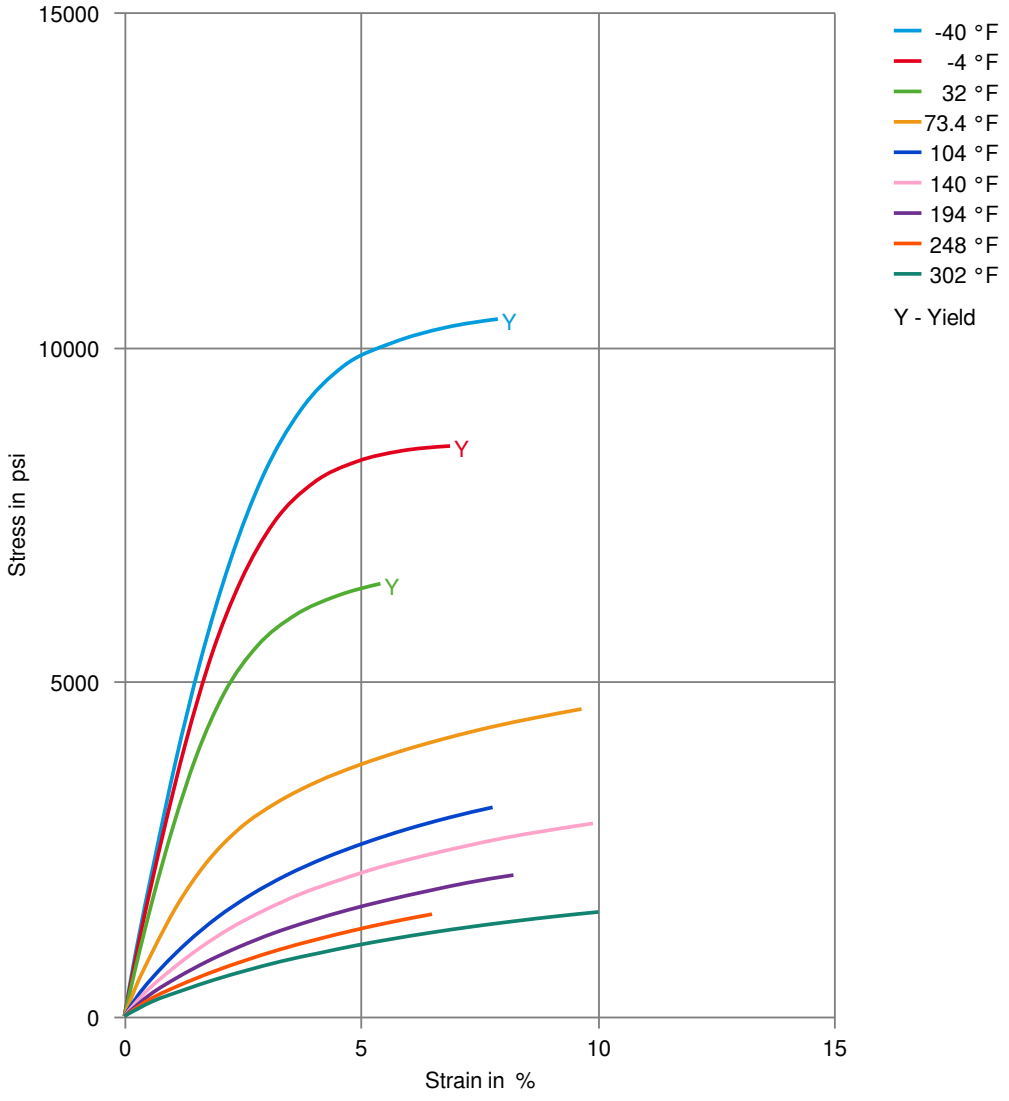


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NYLON RESIN

Stress-strain (cond.)
(measured on Zytel® ST801 BK010A)

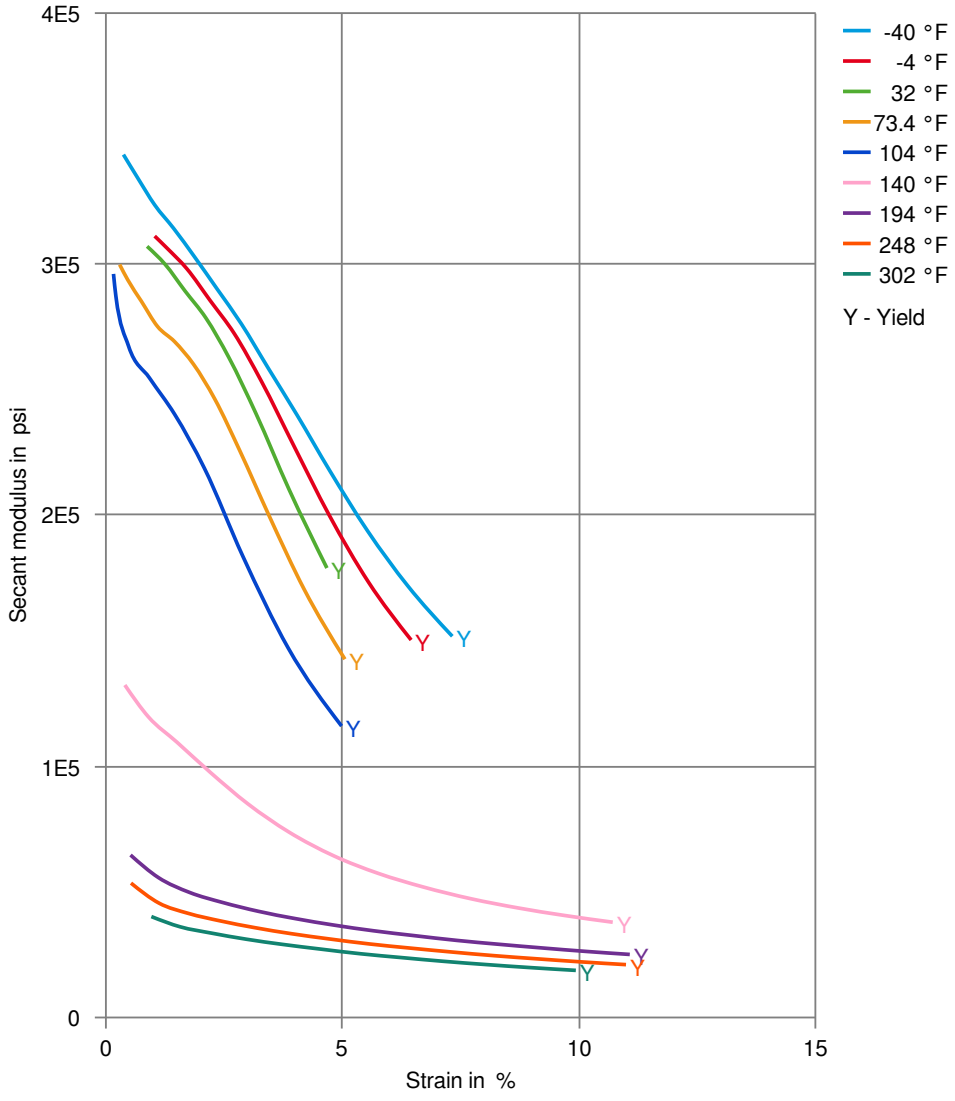


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NYLON RESIN

Secant modulus-strain (dry)
(measured on Zytel® ST801 BK010A)

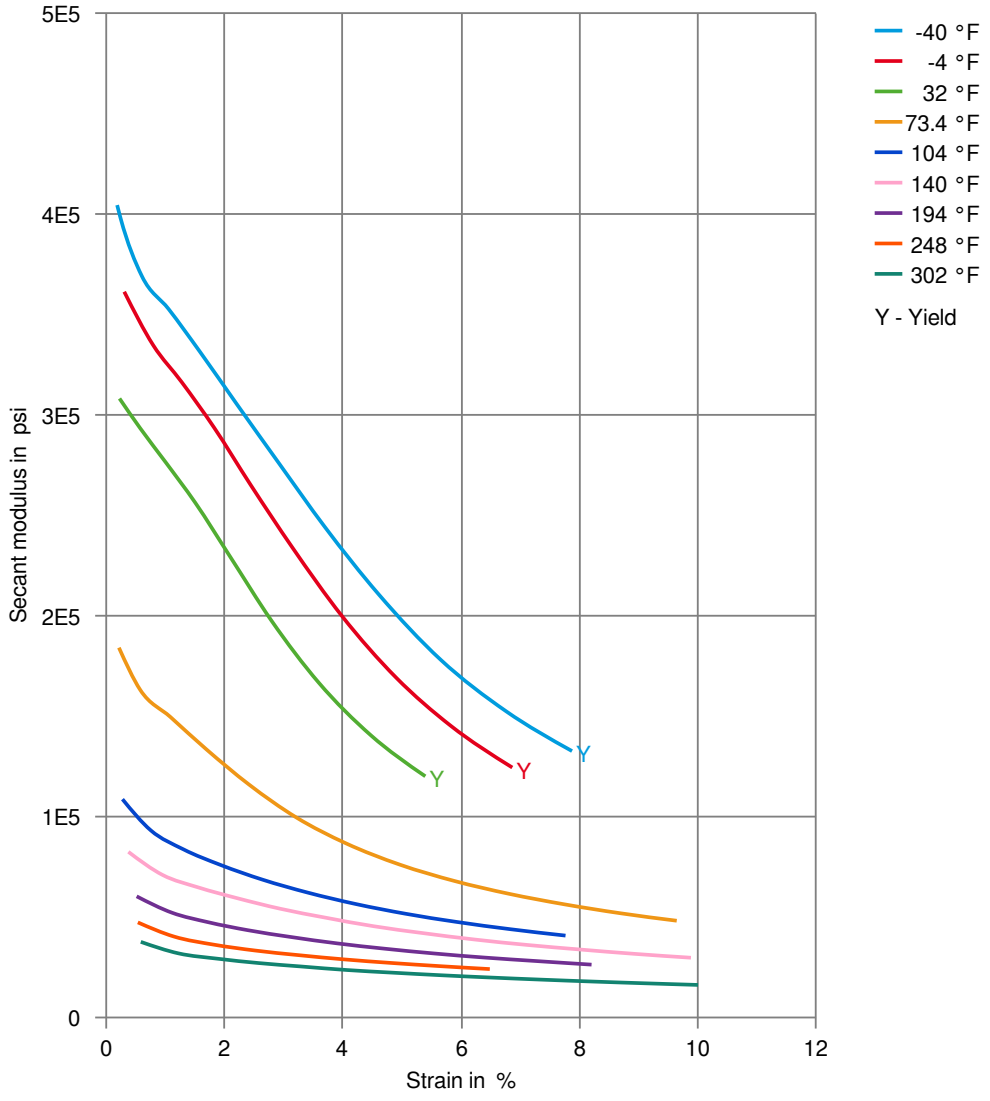


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NYLON RESIN

Secant modulus-strain (cond.)
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Chemical Media Resistance

Alcohols

- ✔ Isopropyl alcohol, 23°C
- ✔ Methanol, 23°C
- ✔ Ethanol, 23°C

Standard Fuels

- ✔ Standard fuel without alcohol (pref. ISO 1817 Liquid C), 23°C

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).

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NOTICE TO USERS: Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colorants or other additives may cause significant variations in data values. Properties of molded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing conditions and environmental exposure. Other than those products expressly identified as medical grade (including by MT® product designation or otherwise), Celanese's products are not intended for use in medical or dental implants. Regardless of any such product designation, any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use. To the best of our knowledge, the information contained in this publication is accurate; however, we do not assume any liability whatsoever for the accuracy and completeness of such information. The information contained in this publication should not be construed as a promise or guarantee of specific properties of our products. It is the sole responsibility of the users to investigate whether any existing patents are infringed by the use of the materials mentioned in this publication. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible adverse effects. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. We recommend that persons intending to rely on any recommendation or to use any equipment, processing technique or material mentioned in this publication should satisfy themselves that they can meet all applicable safety and health standards. We strongly recommend that users seek and adhere to the manufacturer's current instructions for handling each material they use, and entrust the handling of such material to adequately trained personnel only. Please call the telephone numbers listed for additional technical information. Call Customer Services for the appropriate Materials Safety Data Sheets (MSDS) before attempting to process our products.
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