

ISO 1043

ISO 180/1U

### Zytel® 70G25HSLR 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® 70G25HSLR is a 25% glass fibre reinforced, heat stabilised, hydrolysis resistant Polyamide 66 resin for injection moulding.

PA66-GF25

### **Product information**

Resin Identification

Part Marking Code	>PA66-GF25<		ISO 11469	
ISO designation	ISO 16396-PA66,GF25,M1GHNRW,S14-080			
Rheological properties	dry/cond.			
Viscosity number	150/*	cm³/g	ISO 307, 1157, 1628	
Moulding shrinkage, parallel	0.3/-	%	ISO 294-4, 2577	
Moulding shrinkage, normal	1.1/-	%	ISO 294-4, 2577	
Flow length	350/*	mm		
Flow length - width/thickness	2/*	mm		
Typical mechanical properties	dry/cond.			
Tensile Modulus	8500/6000	MPa	ISO 527-1/-2	
Stress at break, 5mm/min	180/120	MPa	ISO 527-1/-2	
Strain at break, 5mm/min	3/6	%	ISO 527-1/-2	
Flexural Modulus	8000/5500	MPa	ISO 178	
Flexural Strength	260/170	MPa	ISO 178	
Charpy impact strength, 23°C	60/80	kJ/m²	ISO 179/1eU	
Charpy impact strength, -30°C	60/45	kJ/m²	ISO 179/1eU	
Charpy notched impact strength, 23°C	10/11	kJ/m²	ISO 179/1eA	
Charpy notched impact strength, -30°C	7/7	kJ/m²	ISO 179/1eA	
Izod notched impact strength, 23°C	11/12	kJ/m²	ISO 180/1A	
Izod notched impact strength, -40°C	7/7	kJ/m²	ISO 180/1A	

Printed: 2023-04-03 Page: 1 of 15

50/80

kJ/m<sup>2</sup>

Revised: 2023-01-19 Source: Celanese Materials Database

Izod impact strength, 23°C



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Izod impact strength, -30°C	50/50	kJ/m²	ISO 180/1U
Ball indentation hardness, H 961/30 Poisson's ratio	260/- 0.34/0.35	MPa	ISO 2039-1
POISSOTTS TALLO	0.34/0.35		
Thermal properties	dry/cond.		
Melting temperature, 10°C/min	262/*	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	80/25	°C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	252/*	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	261/*	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h, 50N	257/*	°C	ISO 306
Coeff. of linear therm. expansion, parallel, -40-23°C	34/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel	33/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, parallel, 55-160°C	18/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23°C	75/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	112/*	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, 55-160°C	130/*	E-6/K	ISO 11359-1/-2
Thermal conductivity of melt	0.21	W/(m K)	Internal
Spec. heat capacity of melt	2090	J/(kg K)	Internal
RTI, electrical, 0.75mm	105	°C	UL 746B
RTI, electrical, 1.5mm	120	°C	UL 746B
RTI, electrical, 3mm	120	°C	UL 746B
RTI, impact, 1.5mm	95	°C	UL 746B
RTI, impact, 3mm	95	°C	UL 746B
RTI, strength, 1.5mm	105/*	°C	UL 746B
RTI, strength, 3mm	110	°C	UL 746B
Flammability	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	HB/*	class	UL 94
Thickness tested	1.5/*	mm	UL 94
UL recognition	yes/*		UL 94
Burning Behav. at thickness h	HB/*	class	UL 94
Thickness tested	3/*	mm	UL 94
UL recognition	yes/*		UL 94
Glow Wire Flammability Index, 1mm	650/-	°C	IEC 60695-2-12
Glow Wire Flammability Index, 2mm	650/-	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3mm	750/-	°C	IEC 60695-2-12
FMVSS Class	В		ISO 3795 (FMVSS
			302)
Burning rate, Thickness 1 mm	26	mm/min	ISO 3795 (FMVSS
			302)

Printed: 2023-04-03 Page: 2 of 15

Revised: 2023-01-19 Source: Celanese Materials Database



### **NYLON RESIN**

Electrical properties  Relative permittivity, 100Hz Dissipation factor, 100Hz Volume resistivity Surface resistivity Comparative tracking index Electric Strength, Short Time, 1mm	dry/cond.  3.6/- 70/- 1E13/- */1E13 400/- 24/-	E-4 Ohm.m Ohm kV/mm	IEC 62631-2-1 IEC 62631-2-1 IEC 62631-3-1 IEC 62631-3-2 IEC 60112 IEC 60243-1
Other properties	dry/cond.		
Humidity absorption, 2mm Water absorption, 2mm Water absorption, Immersion 24h Density Density of melt	2/* 6.4/* 1.4/* 1320/- 1150	% % % kg/m³ kg/m³	Sim. to ISO 62 Sim. to ISO 62 Sim. to ISO 62 ISO 1183 Internal
VDA Properties	dry/cond.		
Odour Fogging, G-value (condensate)	3.5 0.5/*	class mg	VDA 270 ISO 6452
Injection			
Drying Recommended Drying Temperature Drying Time, Dehumidified Dryer Processing Moisture Content Melt Temperature Optimum Min. melt temperature Max. melt temperature Screw tangential speed Mold Temperature Optimum Min. mould temperature Hold pressure range Hold pressure time	2 - 4 ≤0.2 295 285 305 ≤0.2 100 70 120 50 - 100	°C h % °C °C m/s °C °C	Internal
Ejection temperature		°C	Internal

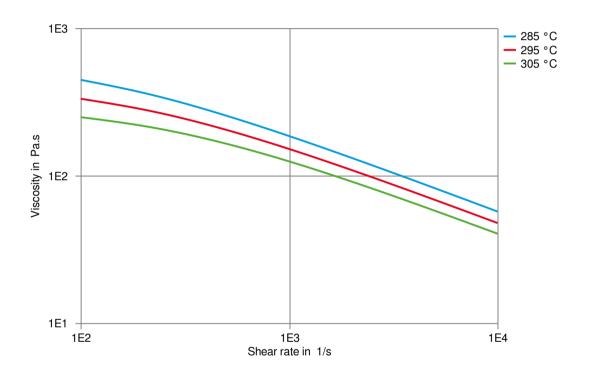
### Characteristics

Additives Release agent

Printed: 2023-04-03 Page: 3 of 15



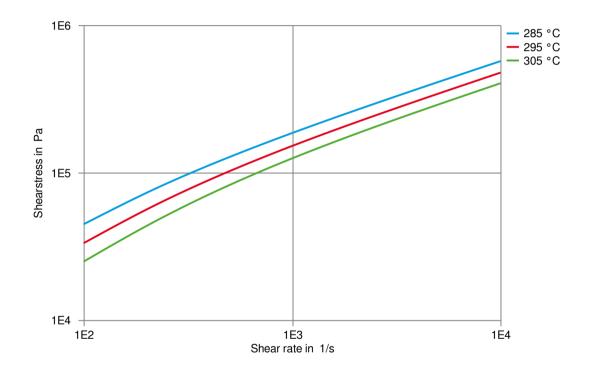
Viscosity-shear rate



Printed: 2023-04-03 Page: 4 of 15



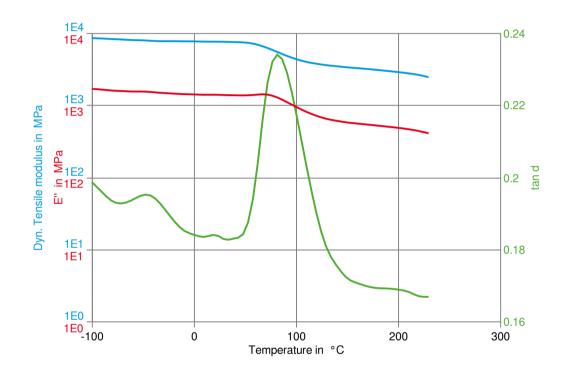
Shearstress-shear rate



Printed: 2023-04-03 Page: 5 of 15



Dynamic Tensile modulus-temperature (dry)

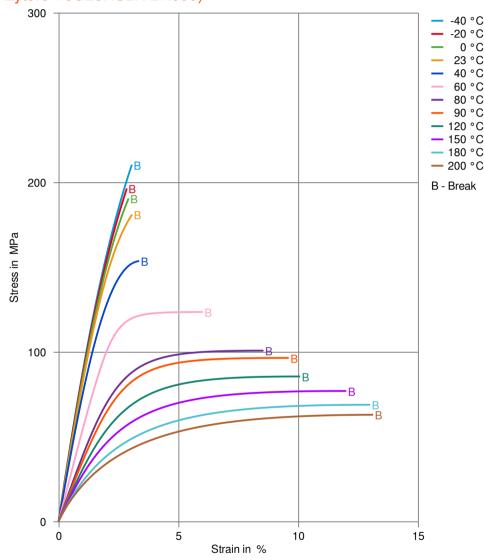


Printed: 2023-04-03 Page: 6 of 15



NYLON RESIN

Stress-strain (dry) (measured on Zytel® 70G25HSLR BK099)

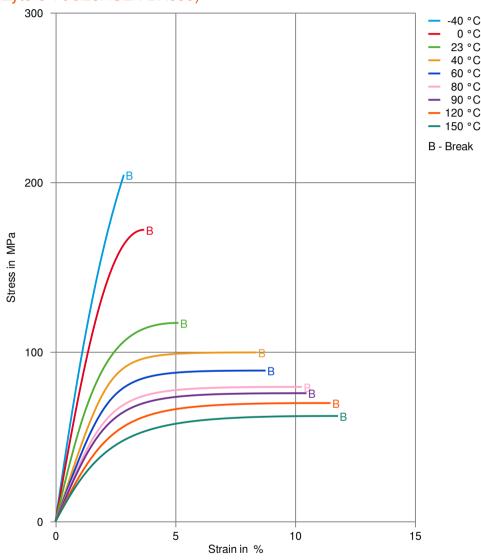


Printed: 2023-04-03 Page: 7 of 15



**NYLON RESIN** 

Stress-strain (cond.) (measured on Zytel® 70G25HSLR BK099)

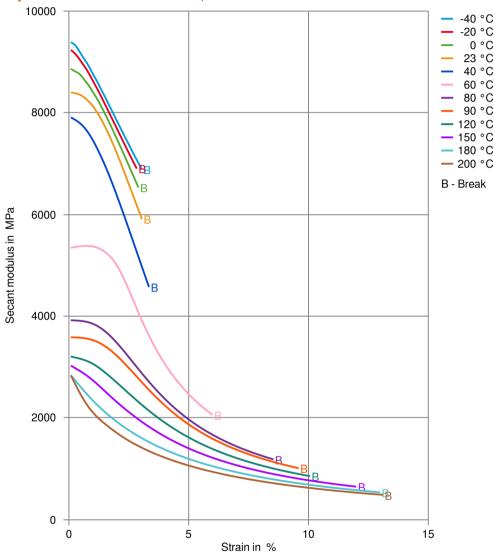


Printed: 2023-04-03 Page: 8 of 15



**NYLON RESIN** 

Secant modulus-strain (dry) (measured on Zytel® 70G25HSLR BK099)

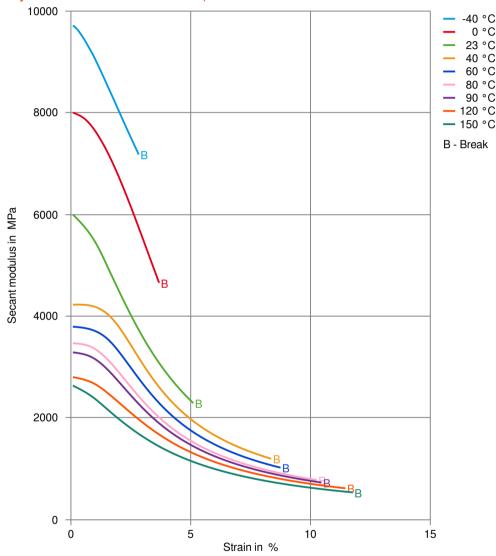


Printed: 2023-04-03 Page: 9 of 15



**NYLON RESIN** 

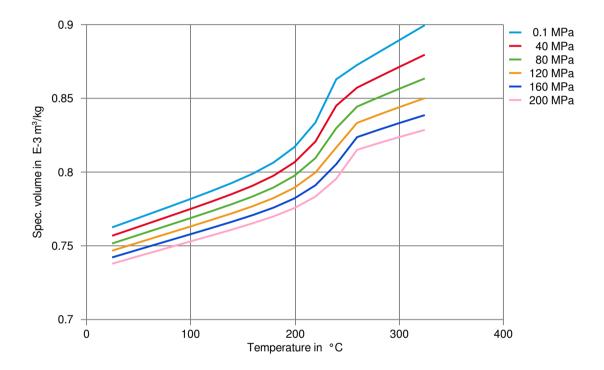
Secant modulus-strain (cond.) (measured on Zytel® 70G25HSLR BK099)



Printed: 2023-04-03 Page: 10 of 15



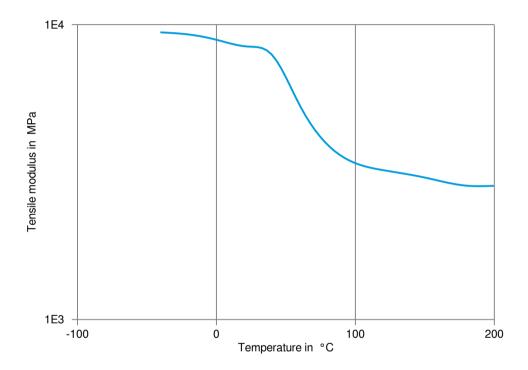
Specific volume-temperature (pvT)



Printed: 2023-04-03 Page: 11 of 15



Tensile modulus-temperature (dry) (measured on Zytel® 70G25HSLR BK099)

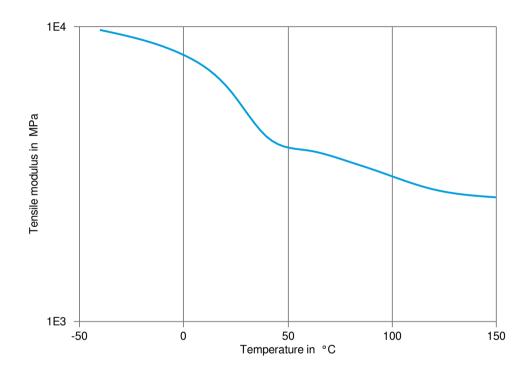


Printed: 2023-04-03 Page: 12 of 15

Revised: 2023-01-19 Source: Celanese Materials Database



Tensile modulus-temperature (cond.) (measured on Zytel® 70G25HSLR BK099)



Printed: 2023-04-03 Page: 13 of 15



### **NYLON RESIN**

### 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
- X Hydrochloric Acid (36% by mass), 23°C
- X Nitric Acid (40% by mass), 23°C
- X Sulfuric Acid (38% by mass), 23°C
- X Sulfuric Acid (5% by mass), 23°C
- X 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
- ✓ 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

Printed: 2023-04-03 Page: 14 of 15



### **NYLON RESIN**

#### Salt solutions

- ✓ Sodium Chloride solution (10% by mass), 23°C
- X Sodium Hypochlorite solution (10% by mass), 23°C
- ✓ Sodium Carbonate solution (20% by mass), 23°C
- ✓ Sodium Carbonate solution (2% by mass), 23°C
- X Zinc Chloride solution (50% by mass), 23°C

#### Other

- ✓ Ethyl Acetate, 23°C
- X Hydrogen peroxide, 23°C
- ✓ DOT No. 4 Brake fluid, 130°C
- ✓ DOT No. 4 Brake fluid. 120°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
- X Phenol solution (5% by mass), 23°C
- ✓ Coolant Glysantin G48, 1:1 in water, 125°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).

x 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).

Printed: 2023-04-03 Page: 15 of 15

Revised: 2023-01-19 Source: Celanese Materials Database

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