



## **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® 70G33HS1L BK031 is a 33% glass fiber reinforced, heat stabilized polyamide 66 resin for injection moulding.

### **Product information**

Resin Identification	PA66-GF33		ISO 1043
Part Marking Code	>PA66-GF33<		ISO 11469
ISO designation	ISO 16396-PA66	6,GF33,M1CGHR,S14-	110
Rheological properties	dry/cond.		
Melt volume-flow rate	21/*	cm <sup>3</sup> /10min	ISO 1133
Temperature	275/*	°C	
Load	5/*	kg	
Melt mass-flow rate	29/*	g/10min	ISO 1133
Viscosity number	143/*	cm <sup>3</sup> /g	ISO 307, 1628
Moulding shrinkage, parallel	0.3/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.1/-	%	ISO 294-4, 2577
Typical mechanical properties	dry/cond.		
Tensile modulus	11000/8000	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	200/140	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	3/5	%	ISO 527-1/-2
Flexural modulus	8500/6000	MPa	ISO 178
Flexural strength	280/200	MPa	ISO 178
Charpy impact strength, 23°C	75/80	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, 23°C	13/17	kJ/m <sup>2</sup>	ISO 179/1eA
Charpy notched impact strength, -40°C	10/10	kJ/m <sup>2</sup>	ISO 179/1eA
Izod notched impact strength, 23°C	12/15	kJ/m <sup>2</sup>	ISO 180/1A
Izod notched impact strength, -40°C	10.0/10.0	kJ/m²	ISO 180/1A
Izod impact strength, 23°C	80/-	kJ/m²	ISO 180/1U
Izod impact strength, -30°C	80/-	kJ/m²	ISO 180/1U
Hardness, Rockwell, M-scale	101/-		ISO 2039-2
Ball indentation hardness, H 961/30	280/-	MPa	ISO 2039-1
Poisson's ratio	0.34/0.34		

Printed: 2025-05-29 Page: 1 of 13





## **NYLON RESIN**

Thermal properties	dry/cond.		
Melting temperature, 10°C/min Glass transition temperature, 10°C/min Temperature of deflection under load, 1.8 MPa Temperature of deflection under load, 0.45 MPa Coeff. of linear therm. expansion, parallel, -40-23°C Coefficient of linear thermal expansion	262/* 80/20 252/* 261/* 24/* 18/*	°C °C °C °C E-6/K E-6/K	ISO 11357-1/-3 ISO 11357-1/-3 ISO 75-1/-2 ISO 75-1/-2 ISO 11359-1/-2 ISO 11359-1/-2
(CLTE), parallel Coeff. of linear therm. expansion, parallel, 55-160°C Coeff. of linear therm. expansion, normal, -40-23°C Coefficient of linear thermal expansion (CLTE), normal	13/* 65/* 83/*	E-6/K E-6/K E-6/K	ISO 11359-1/-2 ISO 11359-1/-2 ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, 55-160°C RTI, electrical, 0.75mm RTI, electrical, 1.5mm RTI, electrical, 3.0mm RTI, impact, 0.75mm RTI, impact, 1.5mm RTI, impact, 3.0mm RTI, strength, 0.75mm RTI, strength, 1.5mm RTI, strength, 3.0mm	140/* 140 140 140 125 125 125 140 140/* 140	E-6/K °C °C °C °C °C °C °C	ISO 11359-1/-2 UL 746B
Flammability	dry/cond.		
Burning Behav. at 1.5mm nom. thickn. Thickness tested UL recognition Burning Behav. at thickness h Thickness tested UL recognition Glow Wire Flammability Index, 0.75mm Glow Wire Flammability Index, 1.5mm Glow Wire Flammability Index, 3.0mm Glow Wire Ignition Temperature, 0.75mm Glow Wire Ignition Temperature, 1.5mm Glow Wire Ignition Temperature, 3.0mm FMVSS Class	HB/* 1.5/* yes/* HB/* 0.75/* yes/* 725/- 700/- 800/- 750/- 725/- 825/- SE	class mm class mm °C °C °C °C °C	IEC 60695-11-10 IEC 60695-11-10 UL 94 IEC 60695-11-10 IEC 60695-11-10 UL 94 IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-12 IEC 60695-2-13 IEC 60695-2-13 IEC 60695-2-13 IEC 60695-2-13 IEC 60695-2-13
Electrical properties	dry/cond.		
Comparative tracking index Comparative tracking index, 23°C	400/- 1/-	PLC	IEC 60112 UL 746A
Physical/Other properties  Humidity absorption, 2mm Water absorption, 2mm Water absorption, Immersion 24h Density	dry/cond.  1.8/* 5.7/* 1.2/* 1390/-	% % % kg/m³	Sim. to ISO 62 Sim. to ISO 62 Sim. to ISO 62 ISO 1183

Printed: 2025-05-29 Page: 2 of 13





## **NYLON RESIN**

VDA Properties	dry/cond.
----------------	-----------

Emission of organic compounds	10	μgC/g	VDA 277
Odour	3	class	VDA 270
Fogging, G-value (condensate)	0.6/*	mg	ISO 6452

### Injection

Drying Recommended	yes	
Drying Temperature	80	°C
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	≤0.2	%
Melt Temperature Optimum	295	°C
Min. melt temperature	285	_
Max. melt temperature	305 <sup>[1]</sup>	°C
Screw tangential speed	≤0.2	m/s
Mold Temperature Optimum	100	°C
Min. mould temperature	70	°C
Max. mould temperature	120	°C
Hold pressure range	50 - 100	MPa
Hold pressure time	3	s/mm
Ejection temperature	208	°C

[1]: Melt temp can be up to 305C in case of moisture is low and residence time is short.

### Characteristics

Processing Injection Moulding

Special characteristics Heat stabilised or stable to heat

### Additional information

Injection molding Maximum hold up time should be 10 minutes.

### **Automotive**

OEM STANDARD ADDITIONAL INFORMATION

Ford WSS-M4D673-B1

General Motors GMW3038P-PA66-GF35H Black
General Motors GMW3038P-PA66-GF35J Black

Hyundai MS941-03 Type A-7

Renault-Nissan AS23, No Spec, Special Part Approval, See

Your CE Account Manager.

Renault-Nissan AS23-a, No Spec, Special Part Approval, See

Your CE Account Manager.

Stellantis MS.50150 / PA66.GF35.10000T.11C.HS CPN1900, 01994\_10\_00013

Stellantis - Chrysler MS.50017 / CPN-1900 Black; CPN1900, 01994 10 00013

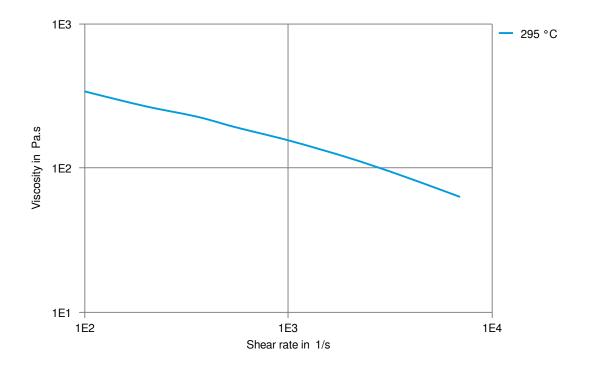
VW Group VW 50133 PA66-7-A

Printed: 2025-05-29 Page: 3 of 13





Viscosity-shear rate (measured on Zytel® 70G33HS1L NC010)

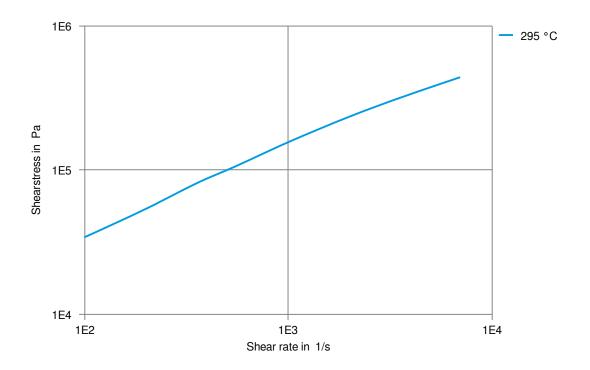


Printed: 2025-05-29 Page: 4 of 13





Shearstress-shear rate (measured on Zytel® 70G33HS1L NC010)

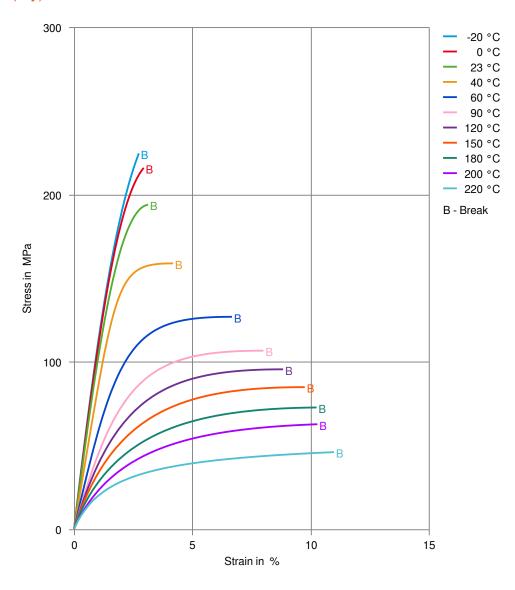


Printed: 2025-05-29 Page: 5 of 13





Stress-strain (dry)

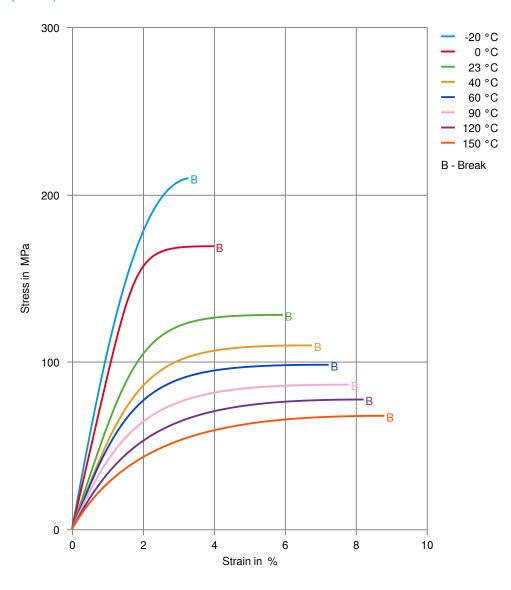


Printed: 2025-05-29 Page: 6 of 13





Stress-strain (cond.)

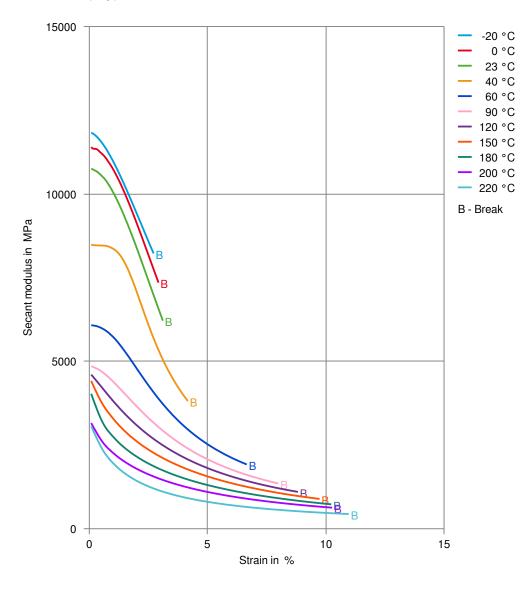


Printed: 2025-05-29 Page: 7 of 13





### Secant modulus-strain (dry)

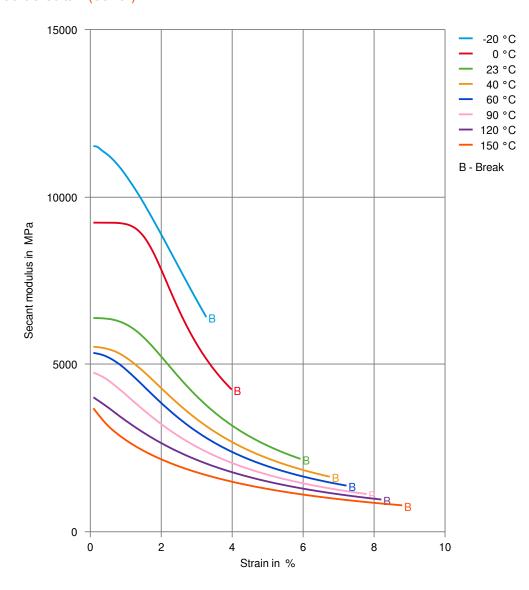


Printed: 2025-05-29 Page: 8 of 13





Secant modulus-strain (cond.)

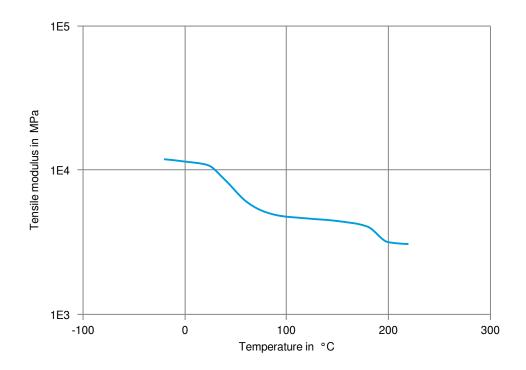


Printed: 2025-05-29 Page: 9 of 13





Tensile modulus-temperature (dry)

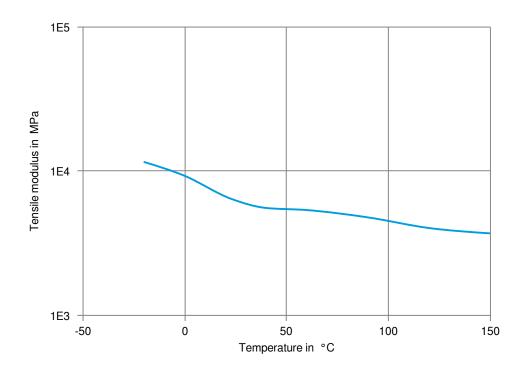


Printed: 2025-05-29 Page: 10 of 13





Tensile modulus-temperature (cond.)



Printed: 2025-05-29 Page: 11 of 13

(+) 18816996168 Ponciplastics.com



## Zytel® 70G33HS1L BK031

### **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

- X 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
- ✓ Motor oil OS206 304 Ref.Eng.Oil, ISP, 135°C
- ✓ Automatic hypoid-gear oil Shell Donax TX, 135°C
- ✓ Hydraulic oil Pentosin CHF 202, 125°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: 2025-05-29 Page: 12 of 13

(+) 18816996168 Ponciplastics.com



## Zytel® 70G33HS1L BK031

### **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
- ✓ 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

#### 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: 2025-05-29 Page: 13 of 13

Revised: 2025-05-01 Source: Celanese Materials Database

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. Colourants or other additives may cause significant variations in data values. Properties of moulded 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 e

© 2025 Celanese or its affiliates. All rights reserved. Celanese®, registered C-ball design and all other trademarks identified herein with ®, TM, SM, unless otherwise noted, are trademarks of Celanese or its affiliates. Fortron is a registered trademark of Fortron Industries LLC.