



NYLON RESIN

ISO 1043: PA6-HI

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® ST7301 NC010 is a Super Tough, heat stabilised, lubricated polyamide 6 resin for injection moulding and extrusion. It offers outstanding impact resistance over a wide temperature and humidity range and high productivity.

Product information

Resin Identification Part Marking Code ISO designation	PA6-HI >PA6-HI< ISO 16396-PA6-I,,M1G1HNR,S14-020		ISO 1043 ISO 11469
Rheological properties	dry/cond.		
Viscosity number	160 ^[1] /*	cm³/g	ISO 307, 1628
Moulding shrinkage, parallel	1.0/-	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.0/-	%	ISO 294-4, 2577
Postmoulding shrinkage, normal, 48h at 80°C	0.1/*	%	ISO 294-4
Postmoulding shrinkage, parallel, 48h at 80°C	0.1/*	%	ISO 294-4
[1]: Sulfuric acid 96%			
Typical mechanical properties	dry/cond.		
Tensile modulus	1800/550	MPa	ISO 527-1/-2
Tensile stress at yield, 50mm/min	48/29	MPa	ISO 527-1/-2
Tensile strain at yield, 50mm/min	4/30	%	ISO 527-1/-2
Nominal strain at break	>50/>50	%	ISO 527-1/-2
Flexural modulus	1700/550	MPa	ISO 178
Flexural stress at 3.5%	53/32	MPa	ISO 178
Tensile creep modulus, 1000h	*/320	MPa	ISO 899-1
Charpy impact strength, 23°C	N/N	kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	N/N	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	80/120	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	17/18	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -40°C	18/17	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	60/95	kJ/m²	ISO 180/1A
Izod notched impact strength, -30°C	14.0/15.0	kJ/m²	ISO 180/1A
Izod notched impact strength, -40°C	15.0/13.0	kJ/m²	ISO 180/1A

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Ball indentation hardness, H 961/30 Poisson's ratio	95/- 0.41/0.47	MPa	ISO 2039-1
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 Coeff. of linear therm. expansion, normal, -40-23°C Thermal conductivity of melt Specific heat capacity of melt	221/* 60/15 51/* 95/* 90/* 98/* 0.15 2600	°C °C °C E-6/K E-6/K W/(m K) J/(kg K)	ISO 11357-1/-3 ISO 11357-1/-3 ISO 75-1/-2 ISO 75-1/-2 ISO 11359-1/-2 ISO 22007-2 ISO 22007-4
Flammability			
FMVSS Class Burning rate, Thickness 1 mm	B <80	mm/min	ISO 3795 (FMVSS 302) ISO 3795 (FMVSS 302)
Physical/Other properties	dry/cond.		
Humidity absorption, 2mm Density Density of melt	2.7/* 1060/- 960	% kg/m³ kg/m³	Sim. to ISO 62 ISO 1183
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 Max. mould temperature Hold pressure range Hold pressure time	2 - 4 ≤0.2 270 260 280 ≤0.3 70 50 90	% °C °C m/s °C °C	
Extrusion			
Drying Temperature Drying Time, Dehumidified Dryer Processing Moisture Content Melt Temperature Optimum Melt Temperature Range	80 3 - 4 ≤0.06 240 235 - 250	% °C	

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Characteristics

Processing Injection Moulding, Film Extrusion, Extrusion, Sheet Extrusion, Other Extrusion,

Coatable, Casting

Delivery form Pellets

Additives Release agent

Special characteristics High impact or impact modified, Heat stabilised or stable to heat

Automotive

OEM STANDARD

 Mercedes-Benz
 DBL5408.21 PA6-HI

 Mercedes-Benz
 DBL5410.01 PA6-I

 VW Group
 TL 501 34 PA6

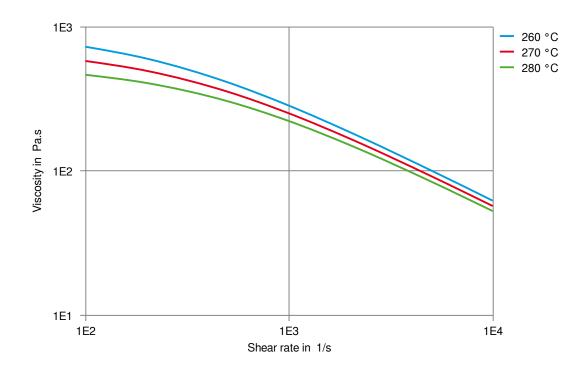
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Viscosity-shear rate

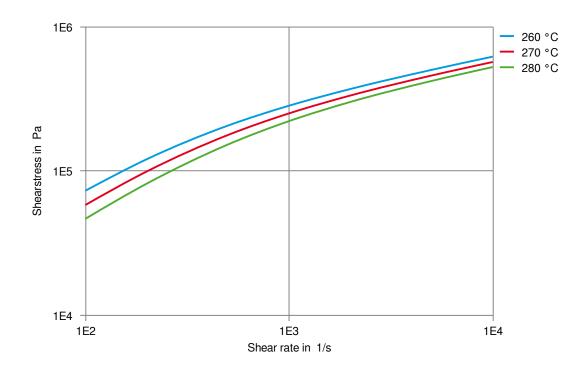


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Shearstress-shear rate



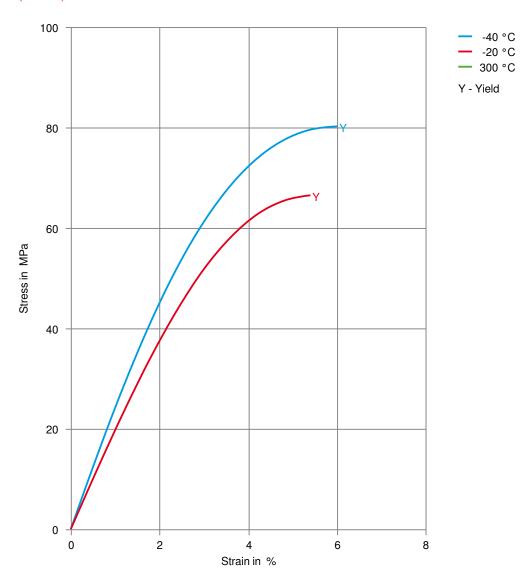
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Stress-strain (cond.)

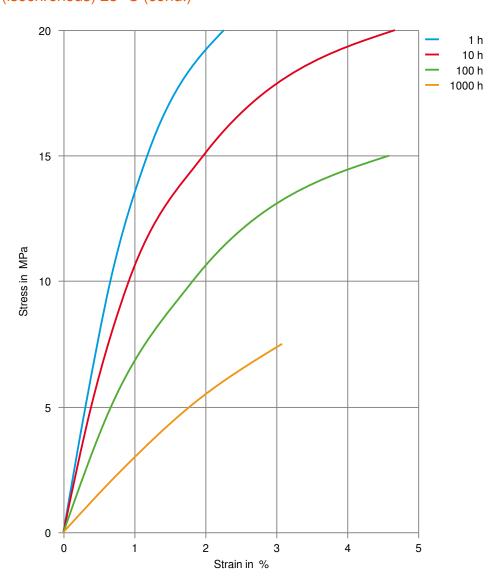


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Stress-strain (isochronous) 23°C (cond.)

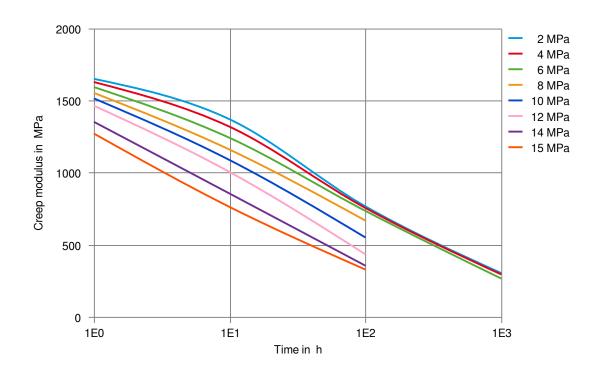


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Creep modulus-time 23°C (cond.)

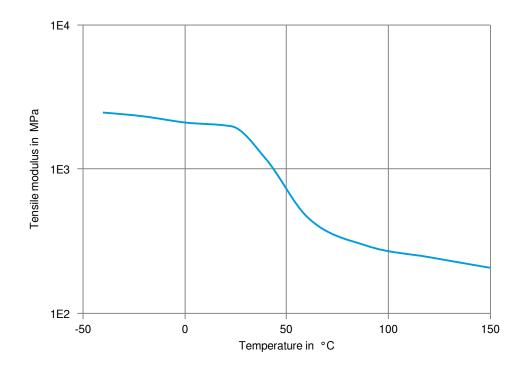


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Tensile modulus-temperature (dry) (measured on Zytel® ST7301 BK356)

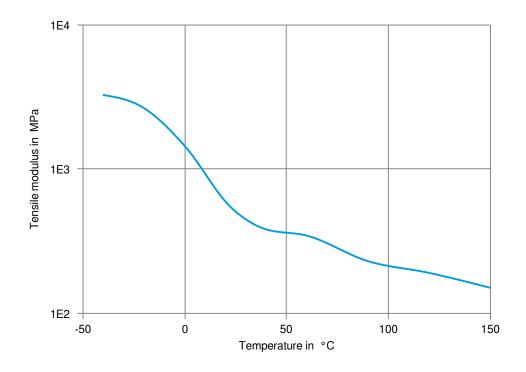


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Tensile modulus-temperature (cond.) (measured on Zytel® ST7301 BK356)



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Zytel® ST7301 NC010

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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
- X SAE 10W40 multigrade motor oil, 130°C
- X 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

Salt solutions

- ✓ Sodium Chloride solution (10% by mass), 23°C
- ★ Sodium Hypochlorite solution (10% by mass), 23°C

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- ✓ 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
- X 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
- X Water, 90°C
- ★ 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).

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