

DuPont™ Zytel® ST7301 NC010

NYLON RESIN

Product Information

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, 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® 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.

General information	Value	Unit	Test Standard
Resin Identification	PA6-HI	-	-
Part Marking Code	>PA6-HI<	-	ISO 11469
Rheological properties	dry / cond	Unit	Test Standard
Viscosity number	150 / *	cm ³ /g	ISO 307, 1157, 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
Mechanical properties	dry / cond	Unit	Test Standard
Tensile Modulus	1800 / 550	MPa	ISO 527-1/-2
Yield stress	48 / 29	MPa	ISO 527-1/-2
Yield strain	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			ISO 179/1eU
23°C	N / N	kJ/m ²	
-30°C	N / N	kJ/m ²	
Charpy notched impact strength			ISO 179/1eA
23°C	80 / 120	kJ/m ²	
-30°C	17 / 18	kJ/m ²	
-40°C	18 / 17	kJ/m ²	
Izod notched impact strength			ISO 180/1A
23°C	59 / 95	kJ/m ²	
-30°C	14 / 15	kJ/m ²	
-40°C	15 / 13	kJ/m ²	
Ball indentation hardness, H 358/30	95 / -	MPa	ISO 2039-1
DS: Derived from similar grade			DS
Thermal properties	dry / cond	Unit	Test Standard
Melting temperature, 10°C/min	221 / *	°C	ISO 11357-1/-3
Temp. of deflection under load			ISO 75-1/-2
1.8 MPa	51 / *	°C	
0.45 MPa	95 / *	°C	

To find out more, visit [DuPont Performance Polymers](#) or contact nearest DuPont location.

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Other properties	dry / cond	Unit	Test Standard
Density	1060 / -	kg/m ³	ISO 1183

Characteristics			
Processing	<ul style="list-style-type: none">• Injection Moulding• Film Extrusion• Profile Extrusion	<ul style="list-style-type: none">• Sheet Extrusion• Other Extrusion• Coatable	<ul style="list-style-type: none">• Casting
Delivery form	<ul style="list-style-type: none">• Pellets		
Additives	<ul style="list-style-type: none">• Lubricants	<ul style="list-style-type: none">• Release agent	
Special characteristics	<ul style="list-style-type: none">• Heat stabilised or stable to heat		
Regional Availability	<ul style="list-style-type: none">• North America• Europe	<ul style="list-style-type: none">• Asia Pacific• South and Central America	<ul style="list-style-type: none">• Near East/Africa• Global

Processing Texts

Injection molding

PREPROCESSING

Drying recommended = Yes, if moisture content of resin exceeds recommended level

Drying temperature = 80 °C

Drying time, dehumidified dryer = 2-4 h

Processing moisture content = <0.15 %

PROCESSING

Melt temperature optimum = 270 °C

Melt temperature range = 260-280 °C

Mold temperature optimum = 70 °C

Mold temperature range = 50-90 °C

Profile extrusion

PREPROCESSING

Drying recommended = Yes, if moisture content of resin exceeds recommended level

Drying temperature = 80 °C

Drying time, dehumidified dryer = 2-4 h

Processing moisture content = <0.02 %

PROCESSING

Melt temperature optimum = 270 °C

Melt temperature range = 260-280 °C

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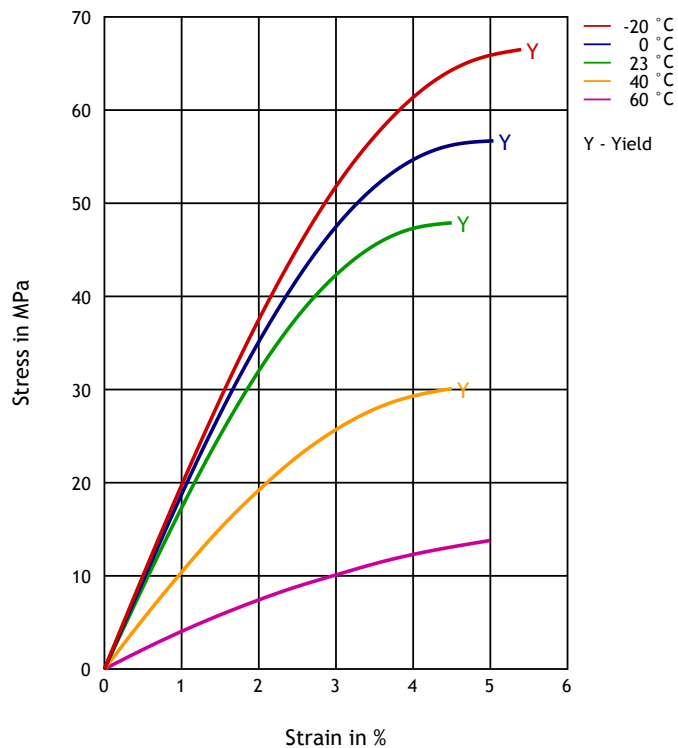


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Diagrams

Stress-strain (dry)



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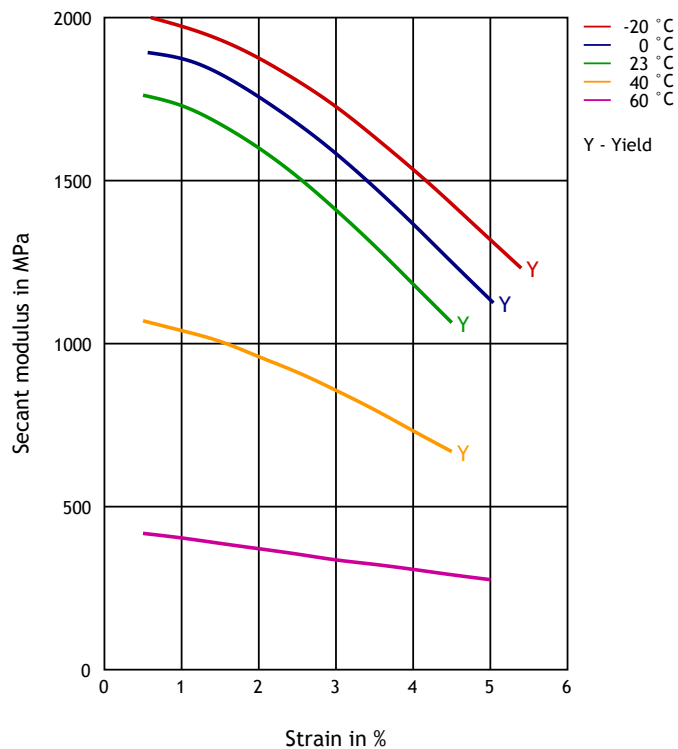
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Secant modulus-strain (dry)



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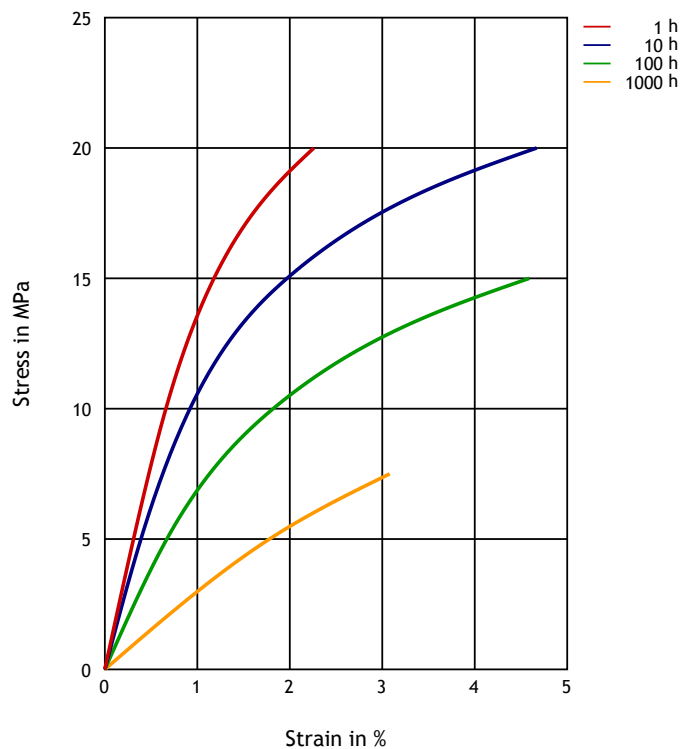
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Stress-strain (isochronous) 23°C (cond.)



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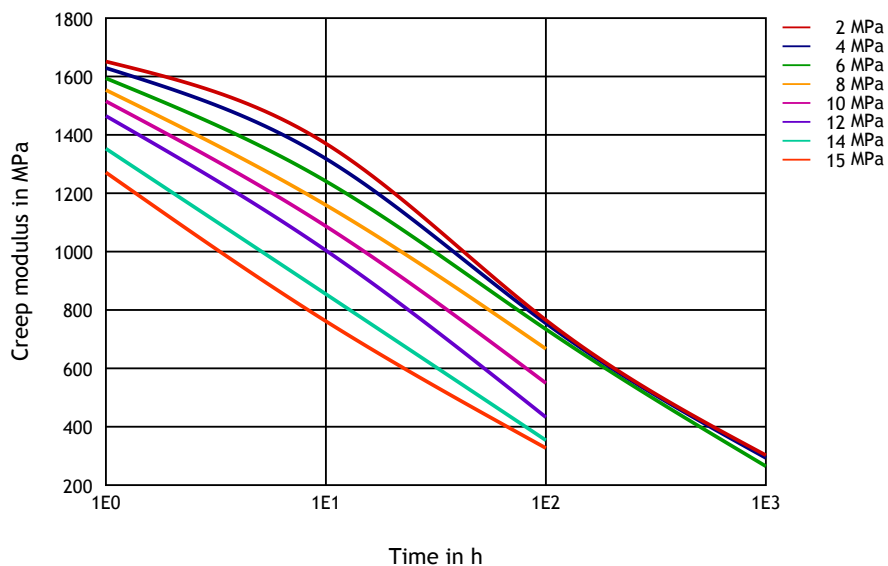
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Creep modulus-time 23 °C (cond.)



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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)
- ✗ 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)
- ✓ 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)

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- ✓ 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)
- ✗ 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).

✗ 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).

Contact DuPont for Material Safety Data Sheet, general guides and/or additional information about ventilation, handling, purging, drying, etc. ISO Mechanical properties measured at 4.0mm (Hytrel® measured at 2 mm), IEC Electrical properties measured at 2.0mm, all ASTM properties measured at 3.2mm, and test temperatures are 23°C unless otherwise stated.

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