DuPont™ Zytel® MT409AHS BK010

NYLON RESIN

Product Information

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® MT409AHS BK010 is a Medium Toughened, high performance, heat stabilised polyamide 66 resin having good stiffness, improved knit line strength, surface appearance with outstanding processability.

General information	Value	Unit	Test Standard	
Resin Identification	PA66-I	-	ISO 1043	
Part Marking Code	>PA66-I<	-	ISO 11469	
Rheological properties	**dry / cond**	**Unit**	**Test Standard**	
Moulding shrinkage, parallel	1.7 / -	%	ISO 294-4, 2577	
Moulding shrinkage, normal	1.7 / -	%	ISO 294-4, 2577	
Mechanical properties	**dry / cond**	**Unit**	**Test Standard**	
Tensile Modulus	2400 / 1100	MPa	ISO 527-1/-2	
Yield stress	61 / 43	MPa	ISO 527-1/-2	
Yield strain	5 / 28	%	ISO 527-1/-2	
Nominal strain at break	25 / >50	%	ISO 527-1/-2	
Flexural Modulus	2200 / 1000	MPa	ISO 178	
Charpy impact strength			ISO 179/1eU	
23°C	N / N	kJ/m²		
-30°C	N / N	kJ/m²		
Charpy notched impact strength			ISO 179/1eA	
23°C	19 / 40	kJ/m²		
-30°C	13 / 12	kJ/m²		
-40°C	12 / 12	kJ/m²		
Izod notched impact strength			ISO 180/1A	
23°C	17 / -	kJ/m²		
-30°C	13 / -	kJ/m²		
-40°C	11 / -	kJ/m²		
Ball indentation hardness, H 358/30	125 / 60[1]	MPa	ISO 2039-1	DS

1: 132/30 DS: Derived from similar grade

Thermal properties	dry / cond	Unit	Test Standard
Melting temperature, 10°C/min	262 / *	°C	ISO 11357-1/-3
Temp. of deflection under load			ISO 75-1/-2
1.8 MPa	65 / *	°C	
0.45 MPa	187 / *	°C	
Coeff. of linear therm. expansion, parallel	100 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	100 / *	E-6/K	ISO 11359-1/-2
RTI, electrical			UL 746B
0.75mm	130 / *	°C	
1.5mm	130 / *	°C	
3mm	130	°C	
RTI, impact			UL 746B
0.75mm	65	°C	
1.5mm	105 / *	°C	
3mm	105	°C	

To find out more, visit DuPont Performance Polymers or contact nearest DuPont location.

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RTI, strength			UL 746B
0.75mm	95	°C	
1.5mm	105 / *	°C	
3mm	110	°C	
Flammability	**dry / cond**	**Unit**	**Test Standard**
Burning Behav. at 1.5mm nom. thickn.	HB / *	class	IEC 60695-11-10
Thickness tested	1.5 / *	mm	IEC 60695-11-10
UL recognition	yes / *	-	UL 94
Burning Behav. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested	0.8 / *	mm	IEC 60695-11-10
UL recognition	yes / *	-	UL 94
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	29	mm/min	ISO 3795 (FMVSS 302)
Electrical properties	**dry / cond**	**Unit**	**Test Standard**
Relative permittivity			IEC 60250
100Hz	3.9 / 9.8	-	
1MHz	3.7 / 4	-	
Dissipation factor			IEC 60250
100Hz	60 / 4350	E-4	
1MHz	130 / 5100	E-4	
Volume resistivity	>1E13 / 9.7E9	Ohm*m	IEC 60093
Surface resistivity	* / 4.7E11	Ohm	IEC 60093
Comparative tracking index	600 / -	-	IEC 60112
Electric Strength, Short Time, 2mm	25 / 22	kV/mm	IEC 60243-1
Other properties	**dry / cond**	**Unit**	**Test Standard**
Density	1110 / -	kg/m³	ISO 1183
Water Absorption, Immersion 24h	0.9 / *	%	Sim. to ISO 62
VDA Properties	**dry / cond**	**Unit**	**Test Standard**
Emission of organic compounds	10	µgC/g	VDA 277
Odour	4	class	VDA 270
Fogging, G-value (condensate)	0.1 / *	mg	ISO 6452
Injection	**dry / cond**	**Unit**	**Test Standard**
Drying Recommended	yes	-	-
Drying Temperature	80	°C	-
Drying Time, Dehumidified Dryer	2 - 4	h	-
Processing Moisture Content	≤0.2	%	-
Melt Temperature Optimum	290	°C	-
Min. melt temperature	280	°C	-
Max. melt temperature	300	°C	-
Max. screw tangential speed	0.3 / *	m/s	-
Mold Temperature Optimum	80	°C	-
Min. mould temperature	50	°C	-
Max. mould temperature	100	°C	-
Hold pressure range	50 - 100	MPa	-
Hold pressure time	4	s/mm	-
Ejection temperature	190	°C	-
Extrusion	**Value**	**Unit**	**Test Standard**
Drying Temperature	≤80	°C	-
Drying Time, Dehumidified Dryer	2 - 4	h	-
Processing Moisture Content	≤0.2	%	-
Melt Temperature Optimum	290	°C	-
Melt Temperature Range	280 - 300	°C	-

Characteristics		
Processing	• Injection Moulding	• Profile Extrusion

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Regional Availability	• North America • Europe	• Asia Pacific • South and Central America	• Near East/Africa • Global

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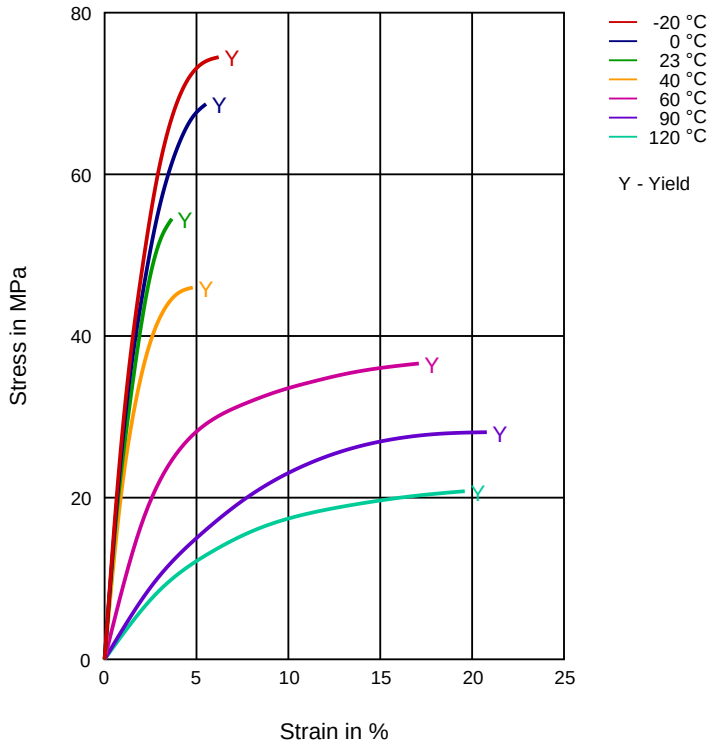
Diagrams

Stress-strain (dry)



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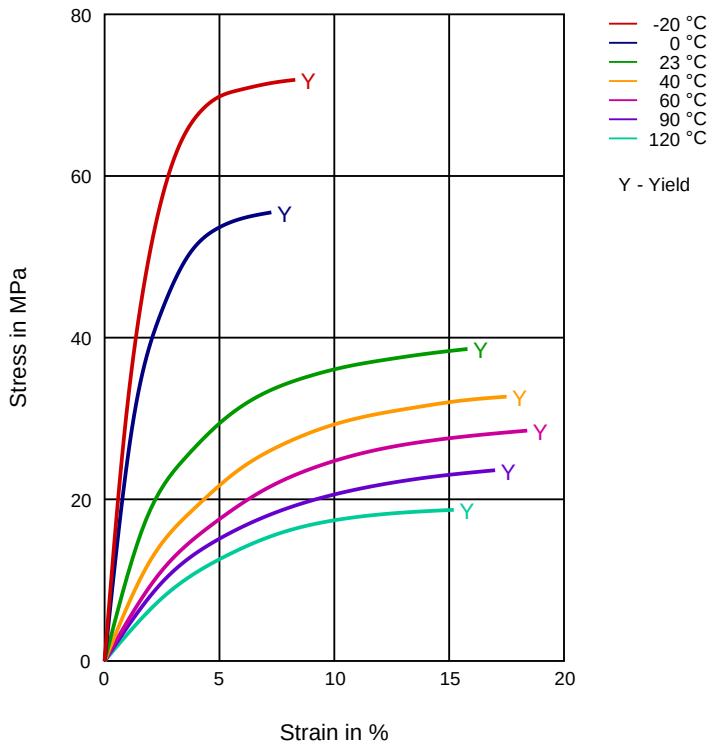
Stress-strain (cond.)



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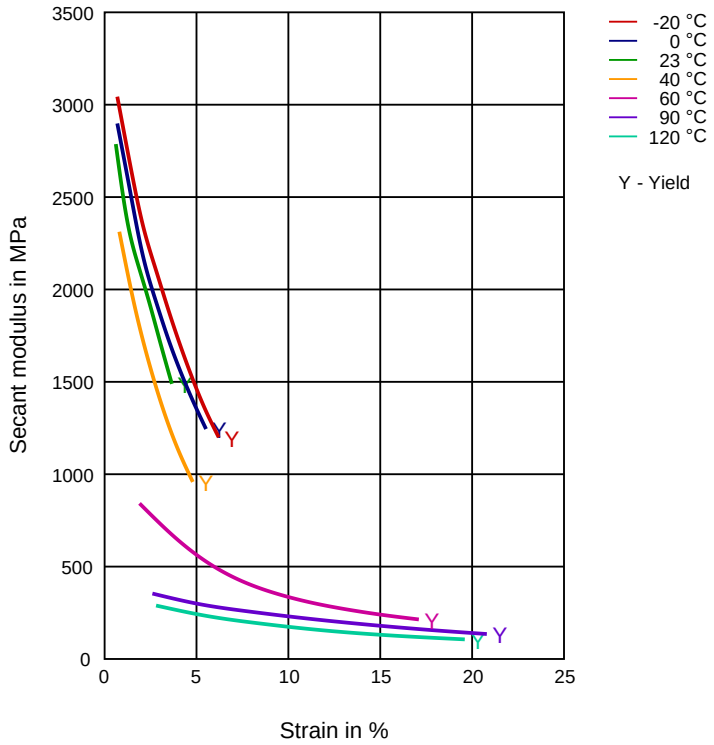
Secant modulus-strain (dry)



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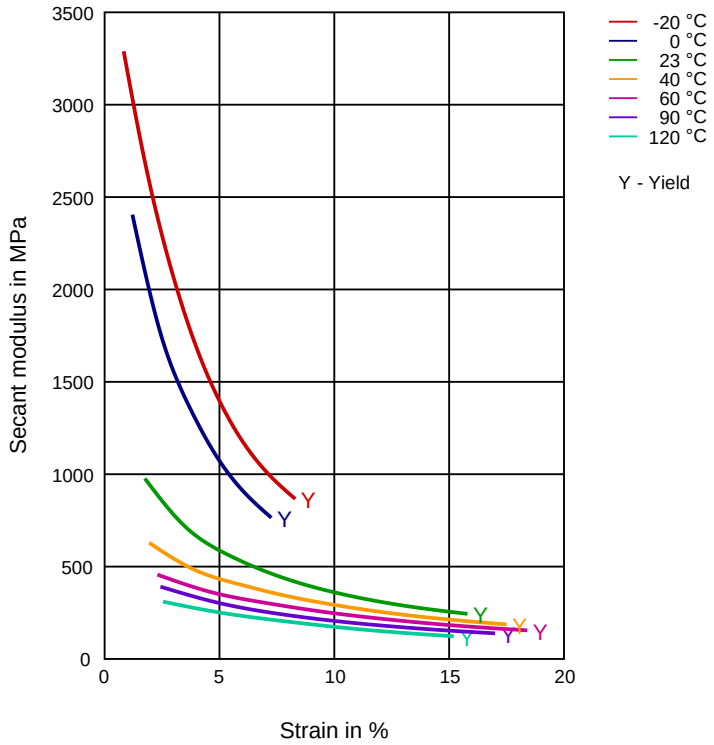

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Chemical Media Resistance

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 4mm (Hytrel® measured at 2 mm), IEC Electrical properties measured at 2mm, all ASTM properties measured at 3.2mm, and test temperatures are 23°C unless otherwise stated.

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