

# DuPont™ Zytel® 8018HS NC010

## 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® 8018HS NC010 is a 14% glass reinforced heat stabilized, toughened polyamide 66 resin.**

Product information	Value	Unit	Test Standard
Resin Identification	PA66-IGF14	-	ISO 1043
Part Marking Code	PA66-IGF14	-	ISO 11469
Rheological properties	dry / cond	Unit	Test Standard
Moulding shrinkage, parallel	0.4 / -	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.8 / -	%	ISO 294-4, 2577
Mechanical properties	dry / cond	Unit	Test Standard
Tensile Modulus	4200 / 2300	MPa	ISO 527-1/-2
Stress at break	85 / 58	MPa	ISO 527-1/-2
Strain at break	6 / 14	%	ISO 527-1/-2
Flexural Modulus	3600 / 2000	MPa	ISO 178
Charpy impact strength			ISO 179/1eU
23°C	80 / 100	kJ/m <sup>2</sup>	
-30°C	80 / 75	kJ/m <sup>2</sup>	
Charpy notched impact strength			ISO 179/1eA
23°C	14 / 18	kJ/m <sup>2</sup>	
-30°C	6 / 6	kJ/m <sup>2</sup>	
-40°C	4 / 4	kJ/m <sup>2</sup>	
Izod notched impact strength			ISO 180/1A
23°C	13 / 18	kJ/m <sup>2</sup>	
-30°C	10 / 5	kJ/m <sup>2</sup>	
-40°C	7 / 5	kJ/m <sup>2</sup>	
Izod impact strength			ISO 180/1U
23°C	90 / 100	kJ/m <sup>2</sup>	
-30°C	90 / 70	kJ/m <sup>2</sup>	
Hardness, Rockwell, M-scale	70 / -	-	ISO 2039-2
Hardness, Rockwell, R-scale	110 / -	-	ISO 2039-2
Thermal properties	dry / cond	Unit	Test Standard
Melting temperature, 10°C/min	263 / *	°C	ISO 11357-1/-3
Temp. of deflection under load			ISO 75-1/-2
1.8 MPa	195 / *	°C	
0.45 MPa	246 / *	°C	
Coeff. of linear therm. expansion, parallel	50 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	118 / *	E-6/K	ISO 11359-1/-2
RTI, electrical			UL 746B
0.75mm	120	°C	
1.5mm	120	°C	
3mm	120	°C	

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RTI, impact			UL 746B
0.75mm	65	°C	
1.5mm	95	°C	
3mm	105	°C	
RTI, strength			UL 746B
0.75mm	85	°C	
1.5mm	105 / *	°C	
3mm	105	°C	
<b>Flammability</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
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	0.75 / *	mm	IEC 60695-11-10
UL recognition	yes / *	-	UL 94
Oxygen index	21 / *	%	ISO 4589-1/-2
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	<80	mm/min	ISO 3795 (FMVSS 302)
<b>Electrical properties</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
Comparative tracking index	580 / -	-	IEC 60112
<b>Other properties</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
Humidity absorption, 2mm	1.9 / *	%	Sim. to ISO 62
Water absorption, 2mm	6.3 / *	%	Sim. to ISO 62
Density	1190 / -	kg/m <sup>3</sup>	ISO 1183
<b>Injection</b>	<b>dry / cond</b>	<b>Unit</b>	<b>Test Standard</b>
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	°C	-
Max. melt temperature	305	°C	-
Max. screw tangential speed	0.2 / *	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	3	s/mm	-
Ejection temperature	210	°C	-
<b>Characteristics</b>			
Processing	• Injection Moulding		
Delivery form	• Pellets		
Additives	• Release agent		
Special characteristics	• Heat stabilised or stable to heat		
Regional Availability	• North America	• South and Central America	

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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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