DuPont™ Zytel® E41HSB 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® E41HSB is an unreinforced, high viscosity, heat stabilized polyamide 66 for injection molding and extrusion.

General information	Value	Unit	Test Standard	
Resin Identification	PA66	-	ISO 1043	
Part Marking Code	PA66	-	ISO 11469	
Rheological properties	**dry / cond**	**Unit**	**Test Standard**	
Viscosity number	230[1] / *	cm³/g	ISO 307, 1157, 1628	
Molding shrinkage, parallel	1.3 / -	%	ISO 294-4, 2577	
Molding shrinkage, normal	1.5 / -	%	ISO 294-4, 2577	DS
Postmolding shrinkage, normal, 48h at 175°F	-0.01 / *	%	ISO 294-4	DS
Postmolding shrinkage, parallel, 48h at 175°F	0.1 / *	%	ISO 294-4	DS
1: Sulfuric acid 96% DS: Derived from similar grade				
Mechanical properties	**dry / cond**	**Unit**	**Test Standard**	
Tensile Modulus	3000 / 1200	MPa	ISO 527-1/-2	
Yield stress	84 / 55	MPa	ISO 527-1/-2	
Yield strain	4 / 26	%	ISO 527-1/-2	
Nominal strain at break	50 / >50	%	ISO 527-1/-2	
Charpy notched impact strength, 73°F	6 / 18	kJ/m²	ISO 179/1eA	
Izod notched impact strength, 73°F	5 / 15	kJ/m²	ISO 180/1A	
Thermal properties	**dry / cond**	**Unit**	**Test Standard**	
Melting temperature, 18°F/min	263 / *	°C	ISO 11357-1/-3	
Temp. of deflection under load			ISO 75-1/-2	
260 psi	75 / *	°C		
65 psi	220 / *	°C		
Flammability	**Value**	**Unit**	**Test Standard**	
FMVSS Class	B	-	ISO 3795 (FMVSS 302)	
Burning rate, Thickness 1 mm	<100	mm/min	ISO 3795 (FMVSS 302)	
Other properties	**dry / cond**	**Unit**	**Test Standard**	
Humidity absorption, 80mil	2.6 / *	%	Sim. to ISO 62	DS
Density	1140 / -	kg/m³	ISO 1183	
DS: Derived from similar grade				
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	0.4 / *	m/s	-	
Mold Temperature Optimum	70	°C	-	

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

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Min. mold temperature	50	°C	-
Max. mold temperature	90	°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	4 - 6	h	-
Melt Temperature Optimum	285	°C	-
Melt Temperature Range	275 - 290	°C	-

Characteristics			
Processing	• Injection Molding • Film Extrusion • Profile Extrusion	• Sheet Extrusion • Other Extrusion • Coating	• Casting
Delivery form	• Pellets		
Special characteristics	• Heat stabilized or stable to heat		
Regional Availability	• Europe	• Near East/Africa	

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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)
- ✗ Motor oil OS206 304 Ref.Eng.Oil, ISP (135°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)

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✓	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)
✓	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 160 mil (Hytrel® measured at 80 mil), IEC Electrical properties measured at 80 mil, all ASTM properties measured at 120 mil, and test temperatures are 73°F unless otherwise stated.

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