

DuPont™ Zytel® FR7026V0F 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® FR7026V0F NC010 is a flame retardant, heat stabilised, polyamide 66 resin for injection moulding. It does not contain elemental phosphorous or heavy metals and uses an halogen free flame retardant package.

Product information	Value	Unit	Test Standard
Resin Identification	PA66-FR(30)	-	ISO 1043
Part Marking Code	PA66-FR(30)	-	ISO 11469
Rheological properties	dry / cond	Unit	Test Standard
Viscosity number	160 / *	cm ³ /g	ISO 307, 1157, 1628
Moulding shrinkage, parallel	0.9 / -	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.0 / -	%	ISO 294-4, 2577
Mechanical properties	dry / cond	Unit	Test Standard
Tensile Modulus	3800 / 1800	MPa	ISO 527-1/-2
Yield stress	* / 60	MPa	ISO 527-1/-2
Yield strain	* / 21	%	ISO 527-1/-2
Nominal strain at break	* / 30	%	ISO 527-1/-2
Stress at break	80 / *	MPa	ISO 527-1/-2
Strain at break	10 / *	%	ISO 527-1/-2
Charpy impact strength, 23°C	80 / 110	kJ/m ²	ISO 179/1eU
Charpy notched impact strength			ISO 179/1eA
23°C	3.5 / 7	kJ/m ²	
-30°C	3 / 2	kJ/m ²	
Izod notched impact strength, 23°C	4.4 / -	kJ/m ²	ISO 180/1A
Ball indentation hardness, H 358/30	- / 110	MPa	ISO 2039-1
DS: Derived from similar grade			
Thermal properties	dry / cond	Unit	Test Standard
Melting temperature, 10°C/min	260 / *	°C	ISO 11357-1/-3
Temp. of deflection under load			ISO 75-1/-2
1.8 MPa	80 / *	°C	
0.45 MPa	230 / *	°C	
Ball pressure test	220 / -	°C	IEC 60695-10-2
Thermal conductivity of melt	0.17	W/(m K)	-
Spec. heat capacity of melt	2590	J/(kg K)	-
RTI, electrical			UL 746B
0.75mm	130	°C	
1.5mm	130	°C	
3mm	130	°C	
RTI, impact			UL 746B
0.75mm	95	°C	
1.5mm	95	°C	
3mm	95	°C	

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RTI, strength			UL 746B
0.75mm	110	°C	
1.5mm	110 / *	°C	
3mm	110	°C	

DS: Derived from similar grade

Flammability	dry / cond	Unit	Test Standard
Burning Behav. at 1.5mm nom. thickn.	V-0 / *	class	IEC 60695-11-10
Thickness tested	1.5 / *	mm	IEC 60695-11-10
UL recognition	yes / *	-	UL 94
Burning Behav. at thickness h	V-0 / *	class	IEC 60695-11-10
Thickness tested	0.82 / *	mm	IEC 60695-11-10
UL recognition	yes / *	-	UL 94
Oxygen index	39 / *	%	ISO 4589-1/-2
Glow Wire Flammability Index			IEC 60695-2-12
0.4mm	960 / -	°C	
0.75mm	960 / -	°C	
1.5mm	960 / -	°C	
3mm	960 / -	°C	
Glow Wire Ignition Temperature			
0.4mm	960 / -	°C	IEC 60695-2-12
0.75mm	960 / -	°C	IEC 60695-2-13
1.5mm	960 / -	°C	IEC 60695-2-13
3mm	960 / -	°C	IEC 60695-2-13
FMVSS Class	DNI	-	ISO 3795 (FMVSS 302)
Electrical properties	dry / cond	Unit	Test Standard
Surface resistivity	* / >1E15 ^[1]	Ohm	IEC 62631-3-2 A
Electric strength	31 / -	kV/mm	IEC 60243-1
Comparative tracking index			
Comparative tracking index	600 / -	-	IEC 60112
CTI, 23°C	0 / -	PLC	UL 746A

1: based on CTI and similar values for FR grades A: Assessed

Other properties	dry / cond	Unit	Test Standard
Humidity absorption, 2mm	2.4 / *	%	Sim. to ISO 62
Water absorption, 2mm	8 / *	%	Sim. to ISO 62
Density	1160 / -	kg/m ³	ISO 1183
Density of melt	1030	kg/m ³	-
VDA Properties	Value	Unit	Test Standard
Odour	5	class	VDA 270
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	280	°C	-
Min. melt temperature	270	°C	-
Max. melt temperature	290	°C	-
Max. screw tangential speed	0.2 / *	m/s	-
Mold Temperature Optimum	70	°C	-
Min. mould temperature	50	°C	-
Max. mould temperature	90	°C	-
Hold pressure range	50 - 100	MPa	-
Hold pressure time	3	s/mm	-
Ejection temperature	210	°C	-

Characteristics

Processing • Injection Moulding

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Delivery form	• Pellets		
Additives	• Release agent		
Regional Availability	• North America	• Asia Pacific	• Near East/Africa
	• Europe	• South and Central America	• Global

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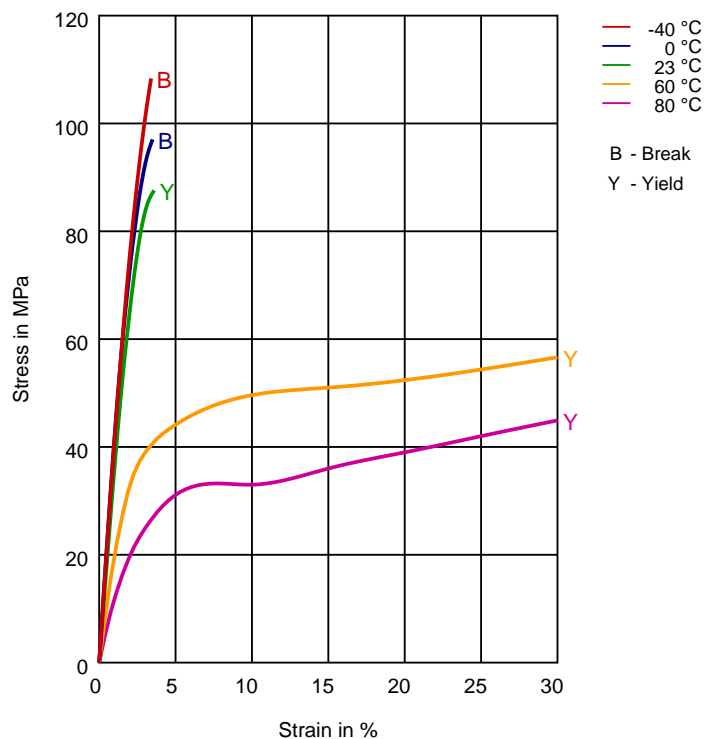


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Diagrams

Stress-strain (dry)



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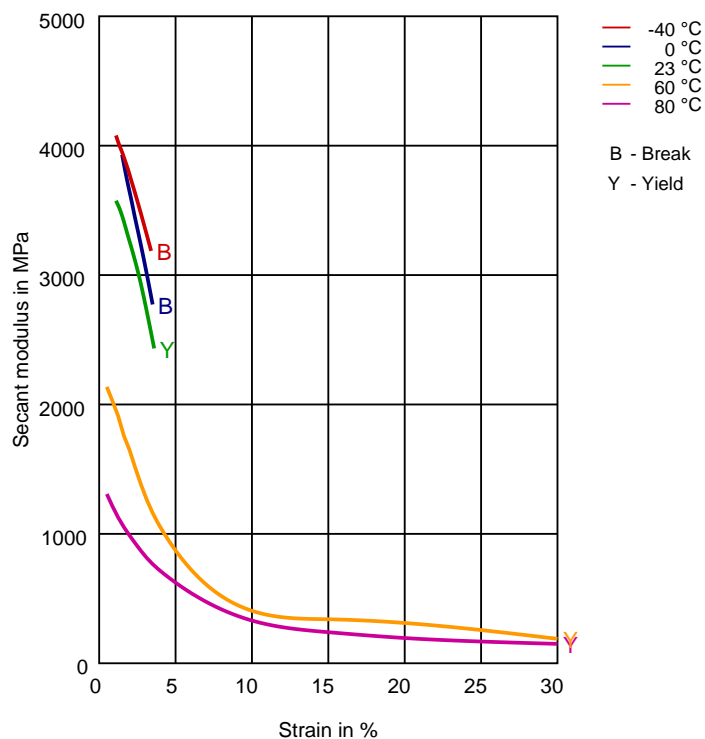


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Secant modulus-strain (dry)



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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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