

DuPont™ Zytel® 7301 NC010

NYLON RESIN

Product Information

Zytel® 7301 NC010 is an Unreinforced Polyamide 6

General information	Value	Unit	Test Standard
Resin Identification	PA6	-	ISO 1043
Part Marking Code	PA6	-	ISO 11469
Rheological properties	dry / cond	Unit	Test Standard
Viscosity number 1: Sulfuric acid 96%	4150 ⁽¹⁾ / *	in ³ /lb	ISO 307, 1157, 1628
Mechanical properties (TPE)	dry / cond	Unit	Test Standard
Abrasion resistance	4.5 / *	mm ³	ISO 4649
Mechanical properties	dry / cond	Unit	Test Standard
Tensile Modulus	420610 / 217557	psi	ISO 527-1/-2
Yield stress	11600 / -	psi	ISO 527-1/-2
Yield strain	4.5 / -	%	ISO 527-1/-2
Nominal strain at break	25 / -	%	ISO 527-1/-2
Strain at Break, 23°C, 50mm/min	50 / -	%	ISO 527-1/-2
Flexural Modulus	334000 / -	psi	ISO 178
Charpy impact strength			ISO 179/1eU
73°F	N / N	ftlb/in ²	
-22°F	N / -	ftlb/in ²	
-40°F	N / -	ftlb/in ²	
Charpy notched impact strength, 73°F	2.85 / -	ftlb/in ²	ISO 179/1eA
Izod notched impact strength			ISO 180/1A
73°F	2.85 / -	ftlb/in ²	
-40°F	2.85 / -	ftlb/in ²	
Izod impact strength, 73°F	- / N	ftlb/in ²	ISO 180/1U
Ball indentation hardness, H 358/30	24700 / -	psi	ISO 2039-1 DS
Hardness, Rockwell, R-scale	119 / -	-	ISO 2039-2
Coefficient of static friction, against steel	- / 0.22	-	ASTM 1894
Coefficient of sliding friction, 1h against steel	- / 0.26	-	ASTM 1894
DS: Derived from similar grade			
Thermal properties	dry / cond	Unit	Test Standard
Melting temperature, 18°F/min	430 / *	°F	ISO 11357-1/-3
Temp. of deflection under load			ISO 75-1/-2
260 psi	131 / *	°F	
65 psi	320 / *	°F	
Coeff. of linear therm. expansion, parallel	3.89E-5 / *	in/in/°F	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	5.56E-5 / *	in/in/°F	ISO 11359-1/-2
Flammability	Value	Unit	Test Standard
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	<100	in/min	ISO 3795 (FMVSS 302)
Electrical properties	dry / cond	Unit	Test Standard
Relative permittivity, 1MHz	3.5 / 7	-	IEC 60250
Volume resistivity	1E13 / 1E10	Ohm*m	IEC 60093
Surface resistivity	* / 1E10	Ohm	IEC 60093
Comparative tracking index	600 / 600	-	IEC 60112
Other properties	dry / cond	Unit	Test Standard
Humidity absorption, 80mil	3 / *	%	Sim. to ISO 62
Water absorption, 80mil	9.5 / *	%	Sim. to ISO 62
Density	1.13 / -	g/cm ³	ISO 1183
Film Properties	dry / cond	Unit	Test Standard
Stress at yield, parallel	4640 / *	psi	ISO 527-3
Stress at yield, normal	4500 / *	psi	ISO 527-3

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Strain at yield, parallel	18 / *	%	ISO 527-3
Strain at yield, normal	18 / *	%	ISO 527-3
Maximum stress, parallel	13100 / *	psi	ISO 527-3
Maximum stress, normal	11600 / *	psi	ISO 527-3
Maximum strain, parallel	350 / *	%	ISO 527-3
Maximum strain, normal	400 / *	%	ISO 527-3
Gloss, 60°	90 / *	-	ISO 2813
Haze	0.02 / *	-	ISO 14782
WVTR, 23°C/85%r.h.	15 / *	g/(m ² *d)	DIS 15106-1/-2
Oxygen transmission rate, 23°C/0%r.h.	12 / *	cm ³ /(m ² *d*bar)	DIS 15105-1/-2
Carbon Dioxide transm. rate, 23°C/0%r.h.	45 / *	cm ³ /(m ² *d*bar)	DIS 15105-1/-2
Thickness of specimen	0.00394 / *	in	-
Injection	dry / cond	Unit	Test Standard
Drying Recommended	yes	-	-
Drying Temperature	176	°F	-
Drying Time, Dehumidified Dryer	2 - 4	h	-
Processing Moisture Content	≤0.2	%	-
Melt Temperature Optimum	518	°F	-
Min. melt temperature	500	°F	-
Max. melt temperature	536	°F	-
Max. screw tangential speed	0.2 / *	m/s	-
Mold Temperature Optimum	158	°F	-
Min. mold temperature	122	°F	-
Max. mold temperature	194	°F	-
Hold pressure range	7250 - 14500	psi	-
Hold pressure time	0.102	s/mil	-
Extrusion	Value	Unit	Test Standard
Drying Temperature	≤176	°F	-
Drying Time, Dehumidified Dryer	4 - 6	h	-
Processing Moisture Content	≤0.05	%	-
Melt Temperature Optimum	455	°F	-
Melt Temperature Range	446 - 464	°F	-
Characteristics			
Processing	<ul style="list-style-type: none"> • Injection Molding • Film Extrusion 	<ul style="list-style-type: none"> • Profile Extrusion • Sheet Extrusion 	<ul style="list-style-type: none"> • Other Extrusion • Coating
Delivery form	<ul style="list-style-type: none"> • Pellets 		
Regional Availability	<ul style="list-style-type: none"> • North America 	<ul style="list-style-type: none"> • 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 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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