Zytel® 101 NC010
Polyamide 66
DuPont Engineering Polymers

IDES | Prospector

Product Description
Zytel® 101 NC010 is a general purpose polyamide 66 resin for injection molding and extrusion.

General			
Material Status	• Commercial: Active		
Availability	• Asia Pacific	• Europe	• North America
Features	• Good Chemical Resistance • Good Electrical Properties	• Good Wear Resistance • Ultrasonic Weldable	
Uses	• Appliance Components • Automotive Applications	• Connectors • Electrical/Electronic Applications	• Filaments
RoHS Compliance	• Contact Manufacturer		
Appearance	• Natural Color		
Forms	• Pellets		
Processing Method	• Filament Extrusion	• Injection Molding	
Part Marking Code (ISO 11469)	• >PA66<		
Resin ID (ISO 1043)	• PA66		

Physical	Dry	Conditioned	Unit	Test Method
Specific Gravity	1.14	--	(g/cm³)	ASTM D792
Molding Shrinkage				
Flow: 0.126 in (3.20 mm)	0.015 (1.5)	--	in/in (%)	Internal Method
Across Flow: 0.0787 in (2.00 mm)	1.4	--	%	ISO 294-4
Flow: 0.0787 in (2.00 mm)	1.4	--	%	ISO 294-4
Water Absorption				
24 hr, 73°F (23°C)	1.2	--	%	ASTM D570
Saturation, 73°F (23°C)	8.5	--	%	ASTM D570 ISO 62
Equilibrium, 73°F (23°C), 50% RH	2.6	--	%	ISO 62

Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Modulus (73°F (23°C))	450000 (3100)	203000 (1400)	psi (MPa)	ISO 527-2

Document Created: Monday, August 23, 2010

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Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Strength				
Yield, -40°F (-40°C)	16500 (114)	16000 (110)	psi (MPa)	ASTM D638
Yield, 73°F (23°C)	12000 (83.0)	8410 (58.0)	psi (MPa)	ASTM D638
Yield, 171°F (77°C)	6530 (45.0)	5800 (40.0)	psi (MPa)	ASTM D638
Yield, 250°F (121°C)	4790 (33.0)	4060 (28.0)	psi (MPa)	ASTM D638
Yield, 73°F (23°C)	11900 (82.0)	7980 (55.0)	psi (MPa)	ISO 527-2
-40°F (-40°C)	16500 (114)	16000 (110)	psi (MPa)	ASTM D638
73°F (23°C)	12000 (83.0)	11200 (77.0)	psi (MPa)	ASTM D638
171°F (77°C)	8990 (62.0)	5950 (41.0)	psi (MPa)	ASTM D638
250°F (121°C)	6240 (43.0)	5510 (38.0)	psi (MPa)	ASTM D638
Tensile Elongation				
Yield, -40°F (-40°C)	4.0	--	%	ASTM D638
Yield, 73°F (23°C)	5.0	25	%	ASTM D638
Yield, 171°F (77°C)	30	30	%	ASTM D638
Yield, 250°F (121°C)	45	40	%	ASTM D638
Yield, 73°F (23°C)	4.5	25	%	ISO 527-2
Break, -40°F (-40°C)	15	20	%	ASTM D638
Break, 73°F (23°C)	60	> 300	%	ASTM D638
Break, 171°F (77°C)	> 300	> 300	%	ASTM D638
Break, 250°F (121°C)	> 300	> 300	%	ASTM D638
Break, 73°F (23°C)	45	--	%	ISO 527-2/50
Nominal Tensile Strain at Break				ISO 527-2
73°F (23°C)	25	> 50	%	
Flexural Modulus				
-40°F (-40°C)	470000 (3240)	500000 (3450)	psi (MPa)	ASTM D790
73°F (23°C)	410000 (2830)	175000 (1210)	psi (MPa)	ASTM D790
171°F (77°C)	99900 (689)	81900 (565)	psi (MPa)	ASTM D790
250°F (121°C)	78000 (538)	60000 (414)	psi (MPa)	ASTM D790
73°F (23°C)	406000 (2800)	174000 (1200)	psi (MPa)	ISO 178
Shear Strength (73°F (23°C))	9600 (66.2)	--	psi (MPa)	ASTM D732

Impact	Dry	Conditioned	Unit	Test Method
Charpy Notched Impact Strength				ISO 179/1eA
-40°F (-40°C)	1.4 (3.0)	--	ft·lb/in² (kJ/m²)	
-22°F (-30°C)	2.1 (4.5)	1.4 (3.0)	ft·lb/in² (kJ/m²)	
73°F (23°C)	2.6 (5.5)	7.1 (15)	ft·lb/in² (kJ/m²)	
Charpy Unnotched Impact Strength				ISO 179/1eU
-22°F (-30°C)	190 (400)	No Break		
73°F (23°C)	No Break	No Break		
Notched Izod Impact				
-40°F (-40°C)	0.599	0.506	ft·lb/in	ASTM D256

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Impact	Dry	Conditioned	Unit	Test Method
	(32.0)	(27.0)	(J/m)	
73°F (23°C)	0.993 (53.0)	2.10 (112)	ft·lb/in (J/m)	ASTM D256
-40°F (-40°C)	2.62 (5.50)	--	ft·lb/in² (kJ/m²)	ISO 180/1A
-22°F (-30°C)	2.62 (5.50)	--	ft·lb/in² (kJ/m²)	ISO 180/1A
73°F (23°C)	2.62 (5.50)	5.71 (12.0)	ft·lb/in² (kJ/m²)	ISO 180/1A
Unnotched Izod Impact Strength				ISO 180/1U
-22°F (-30°C)	143 (300)	--	ft·lb/in² (kJ/m²)	
73°F (23°C)	No Break	No Break		
Tensile Impact Strength				ASTM D1822
73°F (23°C) [2]	240 (504)	699 (1470)	ft·lb/in² (kJ/m²)	
73°F (23°C) [3]	75.2 (158)	110 (232)	ft·lb/in² (kJ/m²)	

Hardness	Dry	Conditioned	Unit	Test Method
Rockwell Hardness				ASTM D785
M-Scale	79	59		
R-Scale	121	108		

Thermal	Dry	Conditioned	Unit	Test Method
Deflection Temperature Under Load				
66 psi (0.45 MPa), Unannealed	410 (210)	--	°F (°C)	ASTM D648
66 psi (0.45 MPa), Unannealed	392 (200)	--	°F (°C)	ISO 75-2/B
264 psi (1.8 MPa), Unannealed	149 (65.0)	--	°F (°C)	ASTM D648
264 psi (1.8 MPa), Unannealed	158 (70.0)	--	°F (°C)	ISO 75-2/A
Brittleness Temperature	-112 (-80.0)	-85.0 (-65.0)	°F (°C)	ASTM D746
Melting Temperature [4]	504 (262)	--	°F (°C)	ISO 11357-3 ASTM D3418
CLTE				ASTM E831
Flow: 73 to 131°F (23 to 55°C)	0.000056 (0.00010)	--	in/in/°F (cm/cm/°C)	
Transverse: 73 to 131°F (23 to 55°C)	0.000061 (0.00011)	--	in/in/°F (cm/cm/°C)	

Electrical	Dry	Conditioned	Unit	Test Method
Volume Resistivity (73°F (23°C))	1.0E+15	1.0E+13	ohm·cm	ASTM D257
Dielectric Strength [5] (0.126 in (3.20 mm))	460 (18)	--	V/mil (kV/mm)	ASTM D149
Dielectric Constant				ASTM D150
73°F (23°C), 100 Hz	4.00	8.00		
73°F (23°C), 1 kHz	3.90	7.00		
73°F (23°C), 1 MHz	3.60	4.60		
Dissipation Factor				ASTM D150
73°F (23°C), 100 Hz	0.010	0.20		
73°F (23°C), 1 kHz	0.020	0.20		
73°F (23°C), 1 MHz	0.020	0.10		

Flammability	Dry	Conditioned	Unit	Test Method
Flame Rating - UL				UL 94
0.0280 in (0.710 mm)	V-2	--		
0.0591 in (1.50 mm)	V-2	--		
0.118 in (3.00 mm)	V-2	--		

Flammability	Dry	Conditioned	Unit	Test Method
0.236 in (6.00 mm)	V-2	--		
Flammability Classification				IEC 60695-11-10, -20
0.0280 in (0.710 mm)	V-2	--		
0.0591 in (1.50 mm)	V-2	--		
0.118 in (3.00 mm)	V-2	--		
0.236 in (6.00 mm)	V-2	--		
Glow Wire Flammability Index				IEC 60695-2-12
0.0280 in (0.710 mm)	1760 (960)	--	°F (°C)	
0.0591 in (1.50 mm)	1760 (960)	--	°F (°C)	
0.118 in (3.00 mm)	1760 (960)	--	°F (°C)	
Glow Wire Ignition Temperature				IEC 60695-2-13
0.0280 in (0.710 mm)	1340 (725)	--	°F (°C)	
0.0591 in (1.50 mm)	1380 (750)	--	°F (°C)	
0.118 in (3.00 mm)	1470 (800)	--	°F (°C)	
Oxygen Index	28	31	%	ASTM D2863

UL 746	Dry	Conditioned	Unit	Test Method
RTI Str				UL 746
0.0280 in (0.710 mm)	185 (85.0)	--	°F (°C)	
0.0591 in (1.50 mm)	185 (85.0)	--	°F (°C)	
0.118 in (3.00 mm)	185 (85.0)	--	°F (°C)	
0.236 in (6.00 mm)	185 (85.0)	--	°F (°C)	
RTI Imp				UL 746
0.0280 in (0.710 mm)	167 (75.0)	--	°F (°C)	
0.0591 in (1.50 mm)	167 (75.0)	--	°F (°C)	
0.118 in (3.00 mm)	167 (75.0)	--	°F (°C)	
0.236 in (6.00 mm)	167 (75.0)	--	°F (°C)	
RTI Elec				UL 746
0.0280 in (0.710 mm)	266 (130)	--	°F (°C)	
0.0591 in (1.50 mm)	266 (130)	--	°F (°C)	
0.118 in (3.00 mm)	266 (130)	--	°F (°C)	
0.236 in (6.00 mm)	266 (130)	--	°F (°C)	
Comparative Tracking Index (CTI)				UL 746
0.118 in (3.00 mm)	> 600	--	V	
Comparative Tracking Index (CTI) (PLC)				UL 746
0.118 in (3.00 mm)	PLC 0	--		

Injection	Nominal Value (English)	Nominal Value (SI)
Drying Temperature	176 °F	80.0 °C
Drying Time	2.0 to 4.0 hr	2.0 to 4.0 hr
Suggested Max Moisture	< 0.20 %	< 0.20 %

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Injection	Nominal Value (English)	Nominal Value (SI)
Processing (Melt) Temp	536 to 572 °F	280 to 300 °C
Mold Temperature	122 to 194 °F	50.0 to 90.0 °C
Drying Recommended	Yes, if moisture content of resin exceeds recommended level	Yes, if moisture content of resin exceeds recommended level
Melt Temperature, Optimum	554 °F	290 °C
Mold Temperature, Optimum	158 °F	70 °C

Notes

[1] Typical properties: these are not to be construed as specifications.

[2] Type L

[3] Type S

[4] 10°C/min

[5] Method A (Short-Time)