

Product Information



# VYDYNE® 21SPF

## Polyamide (Nylon 66)

VYDYNE 21SPF resins are fast cycling general purpose nylon 66 resins with internal and external lubricants. Available in natural and black.

Properties <sup>(1)</sup>	Test Method <sup>(2)</sup>	Units	Dry as Molded <sup>(3)</sup> (0.2% Moisture) SI (English)	Conditioned <sup>(4)</sup> (2.3% Moisture) SI (English)
<b>Physical</b>				
Density – Specific Gravity, 23°C (73°F)	ISO 1183	sp gr 23/23°C		
Density – Specific Gravity, 23°C (73°F)	ASTM D 792	sp gr 23/23°C	1.14	
Mold Shrinkage, Flow Direction, 23°C (73°F)	ASTM D 955	mm/mm (in/in)	0.015-0.020	
Water Absorption @ 24 hours, 23°C (73°F)	ASTM D 570	%	1.3	
Saturation		%	8	
<b>Mechanical</b>				
Tensile Modulus, Secant, 23°C (73°F)	ASTM D 638	MPa (psi)	3370 (490,000)	1970 (286,000)
Tensile Strength @ Yield 23°C (73°F)	ISO 527	MPa (psi)	83 (12,000)	
Tensile Strength @ Yield -40°C (-40°F)	ASTM D 638	MPa (psi)	91 (13,200)	103 (15,000)
23°C (73°F)	ASTM D 638	MPa (psi)	83 (12,000)	58 (8500)
77°C (170°F)	ASTM D 638	MPa (psi)	48 (7000)	38 (5600)
Tensile Elongation @ Yield -40°C (-40°F)	ASTM D 638	%	4	7
23°C (73°F)	ASTM D 638	%	4	20
77°C (170°F)	ASTM D 638	%	25	28
Tensile Elongation @ Break -40°C (-40°F)	ASTM D 638	%	4	15
23°C (73°F)	ASTM D 638	%	45	160
77°C (170°F)	ASTM D 638	%	130	300
Flexural Modulus, Secant, 23°C (73°F)	ISO 178	MPa (psi)	3100 (450,000)	
Flexural Modulus, Secant, 23°C (73°F)	ASTM D 790	MPa (psi)	3030 (440,000)	1170 (170,000)
Flexural Strength, 23°C (73°F)	ASTM D 790	MPa (psi)	117 (17,000)	47(6800)
Notched Izod Impact, 4.0 mm (0.16 in) @ 23°C (73°F)	ISO 180	kJ/m <sup>2</sup>	6.0	
Notched Izod Impact, 3.18 mm (0.125 in) @ 23°C (73°F)	ASTM D 256	J/m (ft lb/in)	59 (1.1)	159 (3.0)
@ -40°C (-40°F)	ASTM D 256	J/m (ft lb/in)	27 (0.5)	29 (0.55)

(1) Typical properties; not to be construed as specifications. Fabrication conditions, part design, additives, processing aids, finishing materials, and use conditions can all affect the integrity, performance, and regulatory status of finished goods.

(2) All data taken on unannealed injection molded test specimens per ISO 294/ASTM D 1897.

(3) Samples sealed in moisture barrier packages immediately after molding.

(4) Equilibrium moisture at 50% relative humidity, 73°F (23°C). Conditioned per ISO 291 and/or ASTM D 618.

Typical Properties

**VYDYNE® 21SPF Polyamide (Nylon 66)**



Properties <sup>(1)</sup>	Test Method <sup>(2)</sup>	Units	Dry as Molded <sup>(3)</sup> (0.2% Moisture) SI (English)	Conditioned <sup>(4)</sup> (2.3% Moisture) SI (English)
<b>Thermal</b>				
Deflection Temperature Under Load Unannealed @ 1.8 MPa (264 psi)	ISO 75	°C (°F)	72 (162)	
Deflection Temperature Under Load Unannealed @ 1.8 MPa (264 psi)	ASTM D 648	°C (°F)	80 (180)	70 (160)
Unannealed @ 0.45 MPa (66 psi)	ASTM D 648	°C (°F)	232 (450)	221 (430)
Melting Point	ISO 3146	°C (°F)	260 (500)	
<b>Electrical</b>				
Volume Resistivity, 23°C (73°F)	ASTM D 257	ohm-cm	6.00E+15	2.00E+13
Dielectric Strength, 23°C (73°F)	ASTM D 149	kV/mm (V/mil)	550	540
Dielectric Constant, 23°C (73°F)	ASTM D 150			
10 <sup>2</sup> Hz			3.7	6
10 <sup>3</sup> Hz			3.6	6
10 <sup>6</sup> Hz			3.1	3.5
Dissipation Factor, 23°C (73°F)	ASTM D 150			
10 <sup>2</sup> Hz			0.02	0.04
10 <sup>3</sup> Hz			0.02	0.04
10 <sup>6</sup> Hz			0.03	0.04
<b>Ignition Characteristics<sup>(5)</sup></b>				
Flame Rating – UL				
0.71 mm (0.028 in)	UL 94		V-2	
1.50 mm (0.059 in)	UL 94		V-2	
3.05 mm (0.120 in)	UL 94		V-2	
<b>UL 746</b>				
Relative Temperature Index – Mechanical without Impact				
0.71 mm (0.028 in)	UL 746	°C (°F)	85 (185)	
1.47 mm (0.059 in)	UL 746	°C (°F)	85 (185)	
3.05 mm (0.120 in)	UL 746	°C (°F)	85 (185)	
Relative Temperature Index – Mechanical with Impact				
0.71 mm (0.028 in)	UL 746	°C (°F)	75 (167)	
1.47 mm (0.059 in)	UL 746	°C (°F)	75 (167)	
3.05 mm (0.120 in)	UL 746	°C (°F)	75 (167)	
Relative Temperature Index – Electrical				
0.71 mm (0.028 in)	UL 746	°C (°F)	130 (266)	
1.47 mm (0.059 in)	UL 746	°C (°F)	130 (266)	
3.05 mm (0.120 in)	UL 746	°C (°F)	130 (266)	
Comparative Track Index				
3.05 mm (0.120 in)	UL 746		0	
High Volt Arc Track Rate				
1.47 mm (0.059 in)	UL 746		0	
3.05 mm (0.120 in)	UL 746		0	
Hot Wire Ignition				
0.71 mm (0.028 in)	UL 746		4	
1.47 mm (0.059 in)	UL 746		3	
3.05 mm (0.120 in)	UL 746		2	
High Ampere Arc Ignition				
0.71 mm (0.028 in)	UL 746		0	
1.47 mm (0.059 in)	UL 746		0	
3.05 mm (0.120 in)	UL 746		0	

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(4) Equilibrium moisture at 50% relative humidity, 73°F (23°C).

(5) All numerical flame spread ratings appearing in this data are not intended to reflect hazards presented by this or any other material under actual fire conditions. Each end user should determine whether potential fire hazards are associated with the finished product and whether VYDYNE resin is suitable for the particular use. Products made from VYDYNE resins should not be exposed to open flames. In the case of direct exposure to open fire, VYDYNE resins and products made therefrom can ignite and burn. Always store and use finished products in locations well away from open flames and other sources of ignition.

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