

Vydyne® 21SPF

Polyamide 66

Ascend Performance Materials LLC.

Technical Data

Product Description

Vydyne® 21SPF is a general purpose Nylon 66 resin available in natural color and black. It is designed principally for injection molding fabrication. This grades offer a well-balanced combination of engineering properties characterized by high strength; rigidity; good toughness; high melt point; good surface lubricity; abrasion resistance; and resistance to many chemicals, solvents, gasoline, and machine and motor oils.

Vydyne 21SPF Series resin permits production of molded parts with good initial color plus good property and color retention when using regrind. This resin is recognized by Underwriters Laboratories and conforms to the requirements of many industrial, federal, and military specifications for premium-quality, general purpose Nylon 66 resins.

Vydyne 21SPF Series resin is internally and externally lubricated for improved machine feed and exceptional mold release. It is intended for use in high-productivity applications. In many applications, the molding cycle can be reduced because parts may be removed from the cavity at higher temperatures. In difficult molds where parts have a tendency to stick in the cavity, Vydyne 21SPF can reduce or eliminate the need for mold release sprays. Critical molded part dimensions should be checked against specifications before implementing shorter molding cycles on a routine production basis.

General

Material Status	• Commercial: Active		
Literature ¹	• Processing (English) • Technical Datasheet (English)		
UL Yellow Card ²	• E70062-249058		
Search for UL Yellow Card	• Ascend Performance Materials LLC. • Vydyne®		
Availability	• Asia Pacific	• Europe	• North America
Additive	• Lubricant		
Features	• Fast Molding Cycle • Gasoline Resistance • Good Abrasion Resistance • Good Chemical Resistance	• Good Mold Release • Good Toughness • High Rigidity • High Strength	• Lubricated • Oil Resistant • Solvent Resistant
Uses	• Bearings • Bushings	• Cams • Connectors	• Electrical Housing • Industrial Applications
Agency Ratings	• ASTM D 4066 PA0111 • ASTM D 6779 PA0111	• FDA 21 CFR 177.1500 • FED L-P-410A	• MIL M-20693B
RoHS Compliance	• RoHS Compliant		
UL File Number	• E70062		
Appearance	• Black	• Natural Color	
Forms	• Pellets		
Processing Method	• Injection Molding		

Physical	Dry	Conditioned	Unit	Test Method
Density	1.14	--	g/cm ³	ISO 1183
Molding Shrinkage				ISO 294-4
Across Flow : 73°F (23°C), 0.0787 in (2.00 mm)	2.1	--	%	
Flow : 73°F (23°C), 0.0787 in (2.00 mm)	1.6	--	%	
Water Absorption				ISO 62
73°F (23°C), 24 hr	1.3	--	%	
Equilibrium, 73°F (23°C), 50% RH	2.4	--	%	
Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Modulus (73°F (23°C))	493000 (3400)	218000 (1500)	psi (MPa)	ISO 527-2
Tensile Stress (Yield, 73°F (23°C))	12300 (85.0)	8990 (62.0)	psi (MPa)	ISO 527-2

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Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Strain				ISO 527-2
Yield, 73°F (23°C)	4.5	20	%	
Break, 73°F (23°C)	25	160	%	
Flexural Modulus (73°F (23°C))	435000 (3000)	196000 (1350)	psi (MPa)	ISO 178
Flexural Strength (73°F (23°C))	12900 (89.0)	3340 (23.0)	psi (MPa)	ISO 178
Poisson's Ratio	0.42	--		ISO 527-2
Impact	Dry	Conditioned	Unit	Test Method
Charpy Notched Impact Strength				ISO 179
-22°F (-30°C)	2.3 (4.9)	--	ft·lb/in ² (kJ/m ²)	
73°F (23°C)	2.9 (6.1)	--	ft·lb/in ² (kJ/m ²)	
Charpy Unnotched Impact Strength				ISO 179
-22°F (-30°C)	No Break	--		
73°F (23°C)	No Break	--		
Notched Izod Impact Strength (73°F (23°C))	2.6 (5.5)	--	ft·lb/in ² (kJ/m ²)	ISO 180
Thermal	Dry	Conditioned	Unit	Test Method
Heat Deflection Temperature				
66 psi (0.45 MPa), Unannealed	401 (205)	--	°F (°C)	ISO 75-2/B
264 psi (1.8 MPa), Unannealed	165 (74.0)	--	°F (°C)	ISO 75-2/A
Vicat Softening Temperature	462 (239)	--	°F (°C)	ISO 306/B
Melting Temperature (DSC)	500 (260)	--	°F (°C)	ISO 3146
CLTE				ISO 11359-2
Flow : 73 to 131°F (23 to 55°C), 0.0787 in (2.00 mm)	6.1E-6 (0.000011)	--	in/in/°F (cm/cm/°C)	
Transverse : 73 to 131°F (23 to 55°C), 0.0787 in (2.00 mm)	6.7E-6 (0.000012)	--	in/in/°F (cm/cm/°C)	
RTI Elec				UL 746
0.0157 in (0.400 mm)	266 (130)	--	°F (°C)	
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)	
RTI Imp				UL 746
0.0157 in (0.400 mm)	167 (75.0)	--	°F (°C)	
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)	

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Thermal	Dry	Conditioned	Unit	Test Method
RTI Str				UL 746
0.0157 in (0.400 mm)	167 (75.0)	--	°F (°C)	
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)	
Electrical	Dry	Conditioned	Unit	Test Method
Volume Resistivity (0.118 in (3.00 mm))	6.0E+15	--	ohm·cm	IEC 60093
Electric Strength ⁴				IEC 60243-1
73°F (23°C), 0.118 in (3.00 mm)	300 (12)	--	V/mil (kV/mm)	
Arc Resistance (0.118 in (3.00 mm))	PLC 5	--		ASTM D495
Comparative Tracking Index (CTI)				UL 746
0.118 in (3.00 mm)	PLC 0	--		
Comparative Tracking Index				IEC 60112
0.118 in (3.00 mm)	> 600	--	V	
High Amp Arc Ignition (HAI)				UL 746
0.0280 in (0.710 mm)	PLC 0	--		
0.0591 in (1.50 mm)	PLC 0	--		
0.118 in (3.00 mm)	PLC 0	--		
High Voltage Arc Tracking Rate (HVTR)				UL 746
0.118 in (3.00 mm)	PLC 0	--		
Hot-wire Ignition (HWI)				UL 746
0.0280 in (0.710 mm)	PLC 4	--		
0.0591 in (1.50 mm)	PLC 3	--		
0.118 in (3.00 mm)	PLC 3	--		
Flammability	Dry	Conditioned	Unit	Test Method
Flame Rating				UL 94
0.0157 in (0.400 mm), All colors	V-2	--		
0.0280 in (0.710 mm), All colors	V-2	--		
0.0591 in (1.50 mm), All colors	V-2	--		
0.118 in (3.00 mm), All colors	V-2	--		
Oxygen Index	26	--	%	ASTM D2863
Injection	Dry (English)	Dry (SI)		
Drying Temperature	< 158 °F	< 70.0 °C		
Drying Time	1.0 to 3.0 hr	1.0 to 3.0 hr		
Suggested Shot Size	40 to 80 %	40 to 80 %		
Suggested Max Regrind	25 %	25 %		
Rear Temperature	518 to 590 °F	270 to 310 °C		

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Injection	Dry (English)	Dry (SI)
Middle Temperature	518 to 590 °F	270 to 310 °C
Front Temperature	518 to 590 °F	270 to 310 °C
Nozzle Temperature	518 to 590 °F	270 to 310 °C
Processing (Melt) Temp	527 to 581 °F	275 to 305 °C
Mold Temperature	59.0 to 203 °F	15.0 to 95.0 °C
Injection Pressure	7980 to 20300 psi	55.0 to 140 MPa
Injection Rate	Fast	Fast
Holding Pressure	7980 to 20300 psi	55.0 to 140 MPa
Back Pressure	29.0 to 145 psi	0.200 to 1.00 MPa
Screw Speed	50 to 150 rpm	50 to 150 rpm
Clamp Tonnage	1.9 to 4.5 tons/in ²	2.7 to 6.2 kN/cm ²
Cushion	0.118 to 0.252 in	3.00 to 6.40 mm

Injection Notes

Injection Time: <1 to 2.5 sec

Notes

¹ These links provide you with access to supplier literature. We work hard to keep them up to date; however you may find the most current literature from the supplier.

² A UL Yellow Card contains UL-verified flammability and electrical characteristics. UL IDES continually works to link Yellow Cards to individual plastic materials in Prospector, however this list may not include all of the appropriate links. It is important that you verify the association between these Yellow Cards and the plastic material found in Prospector. For a complete listing of Yellow Cards, visit the UL Yellow Card Search.

³ Typical properties: these are not to be construed as specifications.

⁴ Step-by-step

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Where to Buy

Supplier

Vydyne® 21SPF

Ascend Performance Materials LLC.

St. Louis, MO USA

Telephone: 888-927-2363

Web: <http://www.ascendmaterials.com/>

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Distributor

Vydyne® 21SPF

Channel Prime Alliance

Telephone: 800-247-8038

Web: <http://www.channelpa.com/>

Availability: North America

Chase Plastic Services, Inc.

Chase Plastic Services is a North American distributor with representatives throughout the region. Please find your rep here: <http://www.chaseplastics.com/contact/locations>

Telephone: 800-232-4273

Web: <http://www.chaseplastics.com/>

Availability: North America

Entec Polymers

Telephone: 800-375-5440

Web: <http://www.entecpolymers.com/>

Availability: North America

GAZECHIM PLASTIQUES

GAZECHIM PLASTIQUES is a Pan European distribution company. Contact GAZECHIM PLASTIQUES for availability of individual products by country.

Telephone: +33-4-67-49-55-37

Web: <http://www.gazechim.com/>

Availability: Belgium, Denmark, Finland, Italy, Netherlands, Norway, Poland, Romania, Spain, Sweden, United Kingdom

Nexeo Solutions - Europe

Nexeo Solutions is a Pan European distribution company. Contact Nexeo for availability of individual products by country.

Telephone: +34-93-480-9125

Web: <http://www.nexeosolutions.com/>

Availability: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, United Kingdom

RESINEX Group

RESINEX is a Pan European distribution company. Contact RESINEX for availability of individual products by country.

Telephone: +32-14-672511

Web: <http://www.resinex.com/>

Availability: Europe

Ultrapolymers

Ultrapolymers is a Pan European distribution company. Contact Ultrapolymers for availability of individual products by country.

Telephone: +32-11-57-95-57

Web: <http://www.ultrapolymers.com/>

Availability: Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Latvia, Lithuania, Macedonia, Netherlands, Norway, Romania, Serbia, Slovakia, Slovenia, South Africa, Spain, Sweden, Turkey, United Kingdom

Vydyne® 21SPF

Channel Prime Alliance

Telephone: 800-247-8038
Web: <http://www.channelpa.com/>
Availability: North America

Chase Plastic Services, Inc.

Chase Plastics Services is a North American distributor with representatives throughout the region. Please find your rep here: <http://www.chaseplastics.com/contact/locations>
Telephone: 800-232-4273
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Availability: North America

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RESINEX Group

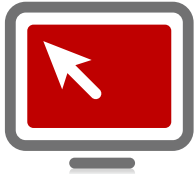
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Ultrapolymers

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– Birgit Elvardt Bader, Production Manager, Micotron

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"With UL IDES data services, our website now displays the most current information on the products we distribute and links to our backend RFQ and sales order system, adding both value and service for our customers."

– Kevin Chase, Owner & President, Chase Plastics



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