

## Technical Data

### Product Description

Vydyne 21SPF BLK is a general-purpose, unfilled, lubricated PA66 resin with an enhanced crystallization temperature. Designed principally to decrease cycle time for injection-molding fabrication, this product offers a combination of engineering properties characterized by high strength; rigidity; good toughness; high melt point; good surface lubricity; abrasion resistance; and resistance to many chemicals, machine and motor oils, solvents and gasoline.

### General

Material Status	• Commercial: Active		
Literature <sup>1</sup>	• <a href="#">Technical Datasheet</a>		
UL Yellow Card <sup>2</sup>	• <a href="#">E70062-249058</a>		
Search for UL Yellow Card	• <a href="#">Ascend Performance Materials Operations LLC</a> • <a href="#">Vydyne®</a>		
Availability	• Asia Pacific	• Europe	• North America
Additive	• Lubricant		
Features	• Abrasion Resistant • Chemical Resistant • Fast Molding Cycle • Gasoline Resistant	• General Purpose • Good Mold Release • Good Toughness • High Rigidity	• High Strength • Lubricated • Oil Resistant • Solvent Resistant
Uses	• Automotive Applications • Bearings • Bushings • Cams	• Connectors • Electrical Housing • Electrical/Electronic Applications • Fasteners	• General Purpose • Housings • Industrial Applications
Agency Ratings	• ASTM D4066 PA0111 • ASTM D6779 PA0111	• FED L-P-410A • MIL M-20693B	• SAE J1639 PA0121 Z6
RoHS Compliance	• RoHS Compliant		
UL File Number	• E70062		
Appearance	• Black		
Forms	• Pellets		
Processing Method	• Injection Molding		

Physical	Dry	Conditioned	Unit	Test Method
Density	1.14	--	g/cm <sup>3</sup>	ISO 1183
Molding Shrinkage				ISO 294-4
Across Flow : 73°F (23°C), 0.0787 in (2.00 mm)	2.0	--	%	
Flow : 73°F (23°C), 0.0787 in (2.00 mm)	2.0	--	%	
Water Absorption				ISO 62
24 hr, 73°F (23°C)	1.2	--	%	
Equilibrium, 73°F (23°C), 50% RH	2.4	--	%	
Outdoor Suitability (Black)	f2	--		UL 746C

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Polyamide 66

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Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Modulus (73°F (23°C))	479000 (3300)	232000 (1600)	psi (MPa)	ISO 527-1
Tensile Stress				ISO 527-2
Yield, 73°F (23°C)	12800 (88.0)	7980 (55.0)	psi (MPa)	
Break, 73°F (23°C)	8700 (60.0)	6530 (45.0)	psi (MPa)	
Tensile Strain (Yield, 73°F (23°C))	5.0	20	%	ISO 527-2
Nominal Tensile Strain at Break				ISO 527-2
73°F (23°C)	20	> 50	%	
Flexural Modulus (73°F (23°C))	479000 (3300)	152000 (1050)	psi (MPa)	ISO 178
Flexural Strength (73°F (23°C))	15200 (105)	4350 (30.0)	psi (MPa)	ISO 178
Poisson's Ratio	0.40	--		ISO 527-2
Impact	Dry	Conditioned	Unit	Test Method
Charpy Notched Impact Strength				ISO 179/1eA
-22°F (-30°C)	2.4 (5.0)	3.3 (7.0)	ft·lb/in <sup>2</sup> (kJ/m <sup>2</sup> )	
73°F (23°C)	2.9 (6.0)	11 (23)	ft·lb/in <sup>2</sup> (kJ/m <sup>2</sup> )	
Charpy Unnotched Impact Strength				ISO 179/1eU
-22°F (-30°C)	No Break	No Break		
73°F (23°C)	No Break	No Break		
Notched Izod Impact Strength				ISO 180
-22°F (-30°C)	2.4 (5.0)	3.3 (7.0)	ft·lb/in <sup>2</sup> (kJ/m <sup>2</sup> )	
73°F (23°C)	2.9 (6.0)	11 (23)	ft·lb/in <sup>2</sup> (kJ/m <sup>2</sup> )	
Thermal	Dry	Conditioned	Unit	Test Method
Deflection Temperature Under Load				
66 psi (0.45 MPa), Unannealed	410 (210)	--	°F (°C)	ISO 75-2/B
264 psi (1.8 MPa), Unannealed	162 (72.0)	--	°F (°C)	ISO 75-2/A
Melting Temperature	500 (260)	--	°F (°C)	ISO 11357-3
CLTE				ISO 11359-2
Flow : 73 to 131°F (23 to 55°C), 0.0787 in (2.00 mm)	5.6E-5 (1.0E-4)	--	in/in/°F (cm/cm/°C)	
Transverse : 73 to 131°F (23 to 55°C), 0.0787 in (2.00 mm)	5.6E-5 (1.0E-4)	--	in/in/°F (cm/cm/°C)	
RTI Elec				UL 746B
0.016 in (0.40 mm)	266 (130)	--	°F (°C)	
0.028 in (0.71 mm)	266 (130)	--	°F (°C)	
0.06 in (1.5 mm)	266 (130)	--	°F (°C)	
0.12 in (3.0 mm)	266 (130)	--	°F (°C)	



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Thermal	Dry	Conditioned	Unit	Test Method
RTI Imp				UL 746B
0.016 in (0.40 mm)	167 (75.0)	--	°F (°C)	
0.028 in (0.71 mm)	167 (75.0)	--	°F (°C)	
0.06 in (1.5 mm)	167 (75.0)	--	°F (°C)	
0.12 in (3.0 mm)	167 (75.0)	--	°F (°C)	
RTI Str				UL 746B
0.016 in (0.40 mm)	167 (75.0)	--	°F (°C)	
0.028 in (0.71 mm)	185 (85.0)	--	°F (°C)	
0.06 in (1.5 mm)	185 (85.0)	--	°F (°C)	
0.12 in (3.0 mm)	185 (85.0)	--	°F (°C)	
Electrical	Dry	Conditioned	Unit	Test Method
Volume Resistivity (0.0295 in (0.750 mm))	1.0E+13	--	ohms·cm	IEC 60093
Dielectric Strength (0.0394 in (1.00 mm))	660 (26)	--	V/mil (kV/mm)	IEC 60243
Arc Resistance (0.118 in (3.00 mm))	PLC 5	--		ASTM D495
Comparative Tracking Index				IEC 60112
0.118 in (3.00 mm)	600	--	V	
High Amp Arc Ignition (HAI)				UL 746A
0.016 in (0.40 mm)	PLC 1	--		
0.028 in (0.71 mm)	PLC 0	--		
0.06 in (1.5 mm)	PLC 0	--		
0.12 in (3.0 mm)	PLC 0	--		
High Voltage Arc Tracking Rate (HVTR)	PLC 0	--		UL 746A
Hot-wire Ignition (HWI)				UL 746A
0.016 in (0.40 mm)	PLC 4	--		
0.028 in (0.71 mm)	PLC 4	--		
0.06 in (1.5 mm)	PLC 3	--		
0.12 in (3.0 mm)	PLC 2	--		
Flammability	Dry	Conditioned	Unit	Test Method
Flame Rating				UL 94
0.016 in (0.40 mm)	V-2	--		
0.028 in (0.71 mm)	V-2	--		
0.06 in (1.5 mm)	V-2	--		
0.12 in (3.0 mm)	V-2	--		



Flammability	Dry	Conditioned	Unit	Test Method
Glow Wire Flammability Index				IEC 60695-2-12
0.016 in (0.40 mm)	1760 (960)	--	°F (°C)	
0.028 in (0.71 mm)	1760 (960)	--	°F (°C)	
0.06 in (1.5 mm)	1760 (960)	--	°F (°C)	
0.12 in (3.0 mm)	1760 (960)	--	°F (°C)	
Glow Wire Ignition Temperature				IEC 60695-2-13
0.016 in (0.40 mm)	1520 (825)	--	°F (°C)	
0.028 in (0.71 mm)	1560 (850)	--	°F (°C)	
0.06 in (1.5 mm)	1560 (850)	--	°F (°C)	
0.12 in (3.0 mm)	1560 (850)	--	°F (°C)	
Oxygen Index	26	--	%	ISO 4589-2

Injection	Dry (English)	Dry (SI)
Drying Temperature	< 158 °F	< 70 °C
Drying Time	1.0 to 3.0 hr	1.0 to 3.0 hr
Rear Temperature	500 to 536 °F	260 to 280 °C
Middle Temperature	518 to 545 °F	270 to 285 °C
Front Temperature	536 to 554 °F	280 to 290 °C
Nozzle Temperature	536 to 572 °F	280 to 300 °C
Processing (Melt) Temp	545 to 572 °F	285 to 300 °C
Mold Temperature	149 to 203 °F	65 to 95 °C

## Notes

<sup>1</sup> 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.

<sup>2</sup> A UL Yellow Card contains UL-verified flammability and electrical characteristics. UL Prospector 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.

<sup>3</sup> Typical properties: these are not to be construed as specifications.



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### Where to Buy

#### Supplier

##### Ascend Performance Materials Operations LLC

Houston, Houston USA

Telephone: 888-927-2363

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

#### Distributor

##### 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

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

Availability: North America

##### Entec Polymers

Telephone: 833-319-0299

Web: [https://www.entecpolymers.com/?utm\\_source=ul&utm\\_medium=paid%20association&utm\\_campaign=entec%20%7C%20entec%20%21&utm\\_term=ul%20%7C%20where%20to%20buy](https://www.entecpolymers.com/?utm_source=ul&utm_medium=paid%20association&utm_campaign=entec%20%7C%20entec%20%21&utm_term=ul%20%7C%20where%20to%20buy)

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, Czech Republic, Denmark, Finland, France, Italy, Netherlands, Norway, Poland, Romania, Slovakia, Spain, Sweden, 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

