

# Vydyne® 21SPF BLK

## polyamide 66



Vydyne 21SPF BLK is a general-purpose PA66 resin. Available in 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, machine and motor oils, solvents and gasoline.

Vydyne 21SPF BLK 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 PA66 resins.

Vydyne 21SPF BLK 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 BLK 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.

Typical Applications/End Uses:  
To come

General			
Material Status	• Commercial: Active		
Availability	• Asia Pacific	• Europe	• North America
Additive	• Lubricant		
Features	<ul style="list-style-type: none"> <li>• Fast Molding Cycle</li> <li>• Gasoline Resistance</li> <li>• Good Abrasion Resistance</li> <li>• Good Chemical Resistance</li> </ul>	<ul style="list-style-type: none"> <li>• Good Mold Release</li> <li>• Good Toughness</li> <li>• High Rigidity</li> <li>• High Strength</li> </ul>	<ul style="list-style-type: none"> <li>• Lubricated</li> <li>• Oil Resistant</li> <li>• Solvent Resistant</li> </ul>
Uses	<ul style="list-style-type: none"> <li>• Bearings</li> <li>• Bushings</li> </ul>	<ul style="list-style-type: none"> <li>• Cams</li> <li>• Connectors</li> </ul>	<ul style="list-style-type: none"> <li>• Electrical Housing</li> <li>• Industrial Applications</li> </ul>
Agency Ratings	<ul style="list-style-type: none"> <li>• ASTM D 4066 PA0111</li> <li>• ASTM D 6779 PA0111</li> </ul>	<ul style="list-style-type: none"> <li>• FDA 21 CFR 177.1500</li> <li>• FED L-P-410A</li> </ul>	<ul style="list-style-type: none"> <li>• MIL M-20693B</li> </ul>
RoHS Compliance	• RoHS Compliant		
Automotive Specifications	<ul style="list-style-type: none"> <li>• ASTM D4000 PA111</li> <li>• ASTM D4066 PA0111</li> <li>• CHRYSLER MS-DB41 CPN1938 Color: Natural</li> <li>• CHRYSLER MS-DB41 CPN1948 Color: Black</li> </ul>	<ul style="list-style-type: none"> <li>• FEDERAL LP410A</li> <li>• FORD WSK-M4D647-A Color: Black</li> <li>• FORD WSK-M4D647-A Color: Natural</li> <li>• GM GMP.PA66.005</li> </ul>	<ul style="list-style-type: none"> <li>• GM GMP.PA66.005 Color: Black</li> <li>• SAE J1639 PA0121 Z6 Color: Black</li> <li>• SAE J1639 PA0121 Z6 Color: Natural</li> </ul>
UL File Number	• E70062		
Appearance	• Black		
Forms	• Pellets		
Processing Method	• Injection Molding		

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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, 0.0787 in	2.0	--	%	
Flow : 73°F, 0.0787 in	2.0	--	%	
Water Absorption (73°F, 24 hr)	1.2	--	%	ISO 62
Water Absorption (Equilibrium, 73°F, 50% RH)	2.4	--	%	ISO 62
Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Modulus (73°F)	479000	232000	psi	ISO 527-2
Tensile Stress (Yield, 73°F)	12800	7980	psi	ISO 527-2
Tensile Stress (Break, 73°F)	8700	6530	psi	ISO 527-2
Tensile Strain (Yield, 73°F)	5.0	20	%	ISO 527-2
Nominal Tensile Strain at Break (73°F)	20	> 50	%	ISO 527-2
Flexural Modulus (73°F)	479000	152000	psi	ISO 178
Flexural Strength (73°F)	15200	4350	psi	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	2.4	3.3	ft·lb/in <sup>2</sup>	
73°F	2.9	11	ft·lb/in <sup>2</sup>	
Charpy Unnotched Impact Strength				ISO 179/1eU
-22°F	No Break	No Break		
73°F	No Break	No Break		
Notched Izod Impact Strength				ISO 180
-22°F	2.4	3.3	ft·lb/in <sup>2</sup>	
73°F	2.9	11	ft·lb/in <sup>2</sup>	

Thermal	Dry	Conditioned	Unit	Test Method
Heat Deflection Temperature 66 psi, Unannealed	410	--	°F	ISO 75-2/B
Heat Deflection Temperature 264 psi, Unannealed	162	--	°F	ISO 75-2/A
Melting Temperature	500	--	°F	ISO 11357-3
CLTE - Flow (73 to 131°F, 0.0787 in)	5.6E-5	--	in/in/°F	ISO 11359-2
CLTE - Transverse (73 to 131°F, 0.0787 in)	5.6E-5	--	in/in/°F	ISO 11359-2
RTI Elec				UL 746
0.0157 in	266	--	°F	
0.0280 in	266	--	°F	
0.0591 in	266	--	°F	
0.118 in	266	--	°F	
RTI Imp				UL 746
0.0157 in	167	--	°F	
0.0280 in	167	--	°F	
0.0591 in	167	--	°F	
0.118 in	167	--	°F	
RTI Str				UL 746
0.0157 in	167	--	°F	
0.0280 in	185	--	°F	
0.0591 in	185	--	°F	
0.118 in	185	--	°F	
Electrical	Dry	Conditioned	Unit	Test Method
Volume Resistivity (0.0295 in)	1.0E+10	--	ohm·cm	IEC 60093
Dielectric Strength (0.0394 in)	660	--	V/mil	IEC 60243
Arc Resistance (0.118 in)	PLC 5	--		ASTM D495
Comparative Tracking Index (0.118 in)	600	--	V	IEC 60112
High Amp Arc Ignition (HAI)				UL 746
0.0280 in	PLC 0	--		
0.0591 in	PLC 0	--		
0.118 in	PLC 0	--		
High Voltage Arc Tracking Rate (HVTR)	PLC 0	--		UL 746
Hot-wire Ignition (HWI)				UL 746
0.0280 in	PLC 4	--		
0.0591 in	PLC 3	--		
0.118 in	PLC 3	--		

Flammability	Dry	Conditioned	Unit	Test Method
Flame Rating				UL 94
0.0157 in	V-2	--		
0.0280 in	V-2	--		
0.0591 in	V-2	--		
0.118 in	V-2	--		
Glow Wire Flammability Index				IEC 60695-2-12
0.0280 in	1470	--	°F	
0.0591 in	1470	--	°F	
0.118 in	1710	--	°F	
Glow Wire Ignition Temperature				IEC 60695-2-13
0.0280 in	1290	--	°F	
0.0591 in	1290	--	°F	
0.118 in	1290	--	°F	
Oxygen Index	26	--	%	ISO 4589-2
<b>Injection</b>		<b>Dry Unit</b>		
Drying Temperature		< 158 °F		
Drying Time		1.0 to 3.0 hr		
Suggested Max Regrind		50 %		
Rear Temperature		500 to 536 °F		
Middle Temperature		518 to 545 °F		
Front Temperature		536 to 554 °F		
Nozzle Temperature		536 to 572 °F		
Processing (Melt) Temp		545 to 572 °F		
Mold Temperature		149 to 203 °F		

**Notes**

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

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