

# Vydyne® 21SPC

## polyamide 66



Vydyne 21SPC is a general-purpose PA66 resin. Available in natural color. It is designed principally for injection-molding fabrication. This resin offers 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 21SPC 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.

Internally and externally lubricated for improved machine feed and exceptional mold release. Vydyne 21SPC 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 21SPC 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:

Vydyne 21SPC has been used in many molding applications such as terminal blocks, bearings, bushings, cams, electrical connectors and housings, electrical cable ties/tie straps and many other hardware and general industrial parts.

General			
Material Status	• Commercial: Active		
Availability	• Asia Pacific	• Europe	• North America
Additive	• Lubricant		
Features	<ul style="list-style-type: none"> <li>• Abrasion Resistant</li> <li>• Chemical Resistant</li> <li>• Fast Molding Cycle</li> <li>• Gasoline Resistant</li> <li>• General Purpose</li> </ul>	<ul style="list-style-type: none"> <li>• Good Mold Release</li> <li>• Good Toughness</li> <li>• Halogen Free</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>• Housings</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> <li>• EC 1935/2004</li> </ul>	<ul style="list-style-type: none"> <li>• EU 10/2011</li> <li>• EU 2023/2006</li> <li>• FDA 21 CFR 177.1500</li> </ul>	<ul style="list-style-type: none"> <li>• FED L-P-410A</li> <li>• MIL M-20693B</li> <li>• NSF STD-51</li> </ul>
RoHS Compliance	• RoHS Compliant		
Automotive Specifications	<ul style="list-style-type: none"> <li>• FORD WSK-M4D647-A</li> <li>• FORD WSK-M4D647-A Color: Black</li> <li>• GM GMP.PA66.005</li> </ul>	<ul style="list-style-type: none"> <li>• GM GMP.PA66.005 Color: Black</li> <li>• GM QK 002921 Color: Natural</li> <li>• NISSAN PA66-INX-1</li> </ul>	<ul style="list-style-type: none"> <li>• SAE J1639 PA0121 Z6</li> <li>• SAE J1639 PA0121 Z6 Color: Black</li> </ul>
UL File Number	• E70062		
Appearance	• Natural Color		
Forms	• Pellets		
Processing Method	• Injection Molding		
Multi-Point Data	• Isothermal Stress vs. Strain (ISO 11403-1)		

Physical	Dry	Conditioned	Unit	Test Method
Density	1.14	--	g/cm <sup>3</sup>	ISO 1183
Molding Shrinkage				ISO 294-4
Across Flow : 23°C, 2.00 mm	1.7	--	%	
Flow : 23°C, 2.00 mm	1.8	--	%	
Water Absorption (23°C, 24 hr)	1.2	--	%	ISO 62
Water Absorption (Equilibrium, 23°C, 50% RH)	2.4	--	%	ISO 62
Outdoor Suitability	f2	--		UL 746C
Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Modulus (23°C)	3100	1400	MPa	ISO 527-2
Tensile Stress (Yield, 23°C)	82.0	55.0	MPa	ISO 527-2
Tensile Stress (Break, 23°C)	55.0	45.0	MPa	ISO 527-2
Tensile Strain (Yield, 23°C)	5.0	25	%	ISO 527-2
Nominal Tensile Strain at Break (23°C)	25	> 50	%	ISO 527-2
Flexural Modulus (23°C)	2900	1500	MPa	ISO 178
Flexural Strength (23°C)	80.0	50.0	MPa	ISO 178
Poisson's Ratio	0.40	--		ISO 527
Impact	Dry	Conditioned	Unit	Test Method
Charpy Notched Impact Strength				ISO 179/1eA
-30°C	5.0	7.0	kJ/m <sup>2</sup>	
23°C	6.0	20	kJ/m <sup>2</sup>	
Charpy Unnotched Impact Strength				ISO 179/1eU
-30°C	No Break	No Break		
23°C	No Break	No Break		
Notched Izod Impact Strength				ISO 180
-30°C	5.0	7.0	kJ/m <sup>2</sup>	
23°C	6.0	20	kJ/m <sup>2</sup>	

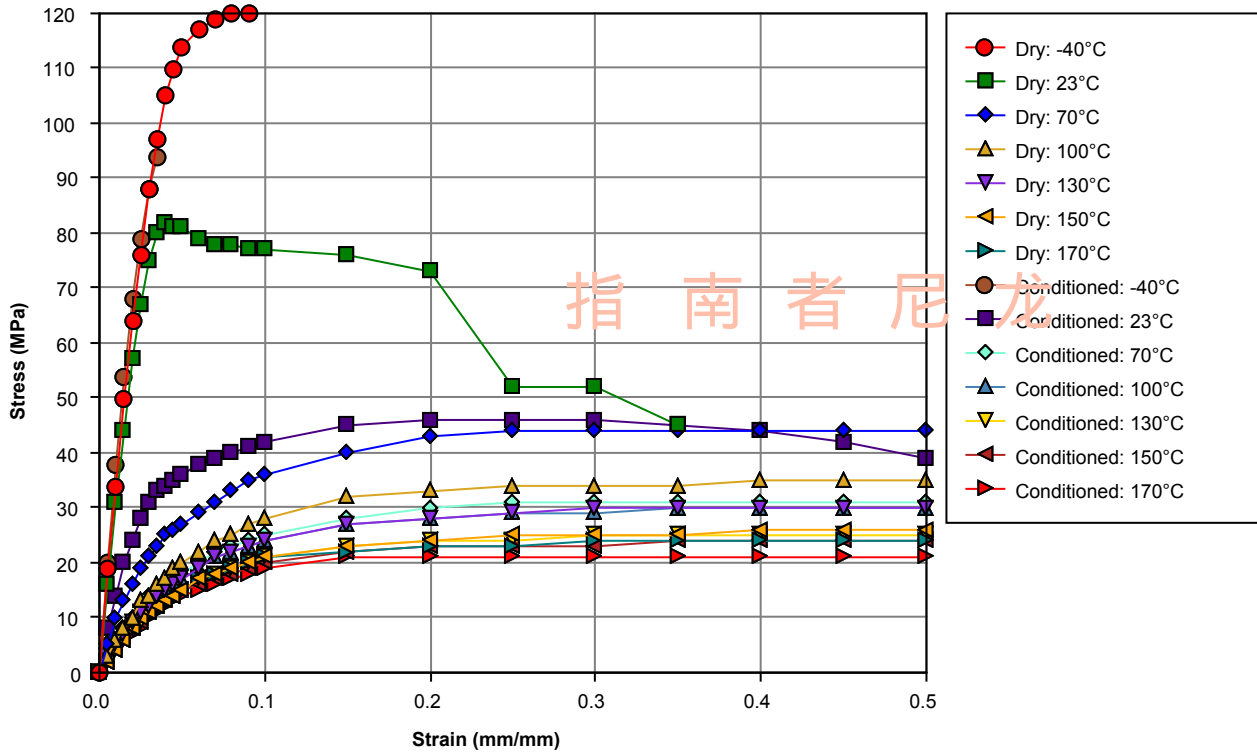
Thermal	Dry	Conditioned	Unit	Test Method
Heat Deflection Temperature 0.45 MPa, Unannealed	200	--	°C	ISO 75-2/B
Heat Deflection Temperature 1.8 MPa, Unannealed	70.0	--	°C	ISO 75-2/A
Melting Temperature	260	--	°C	ISO 11357-3
CLTE - Flow (23 to 55°C)	1.0E-4	--	cm/cm/°C	ISO 11359-2
CLTE - Transverse (23 to 55°C)	1.0E-4	--	cm/cm/°C	ISO 11359-2
RTI Elec				UL 746
0.40 mm	130	--	°C	
0.71 mm	130	--	°C	
1.5 mm	130	--	°C	
3.0 mm	130	--	°C	
RTI Imp				UL 746
0.40 mm	75.0	--	°C	
0.71 mm	75.0	--	°C	
1.5 mm	75.0	--	°C	
3.0 mm	75.0	--	°C	
RTI Str				UL 746
0.40 mm	75.0	--	°C	
0.71 mm	85.0	--	°C	
1.5 mm	85.0	--	°C	
3.0 mm	85.0	--	°C	

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Electrical	Dry	Conditioned	Unit	Test Method
Volume Resistivity (0.750 mm)	1.0E+13	--	ohms-cm	IEC 60093
Dielectric Strength (1.00 mm)	26	--	kV/mm	IEC 60243
Arc Resistance (3.00 mm)	PLC 5	--		ASTM D495
Comparative Tracking Index (3.00 mm)	600	--	V	IEC 60112
High Amp Arc Ignition (HAI)				UL 746
0.40 mm	PLC 1	--		
0.71 mm	PLC 0	--		
1.5 mm	PLC 0	--		
3.0 mm	PLC 0	--		
High Voltage Arc Tracking Rate (HVTR)	PLC 0	--		UL 746
Hot-wire Ignition (HWI)				UL 746
0.40 mm	PLC 4	--		
0.71 mm	PLC 4	--		
1.5 mm	PLC 3	--		
3.0 mm	PLC 2	--		
Flammability	Dry	Conditioned	Unit	Test Method
Flame Rating				UL 94
0.40 mm	V-2	--		
0.71 mm	V-2	--		
1.5 mm	V-2	--		
3.0 mm	V-2	--		
Glow Wire Flammability Index				IEC 60695-2-12
0.40 mm	960	--	°C	
0.71 mm	960	--	°C	
1.5 mm	960	--	°C	
3.0 mm	960	--	°C	
Glow Wire Ignition Temperature				IEC 60695-2-13
0.40 mm	825	--	°C	
0.71 mm	850	--	°C	
1.5 mm	850	--	°C	
3.0 mm	850	--	°C	
Oxygen Index	25	--	%	ISO 4589-2

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Isothermal Stress vs. Strain (ISO 11403-1)



Injection	Dry Unit
Drying Temperature	< 70 °C
Drying Time	1.0 to 3.0 hr
Suggested Max Regrind	50 %
Rear Temperature	260 to 280 °C
Middle Temperature	270 to 285 °C
Front Temperature	280 to 290 °C
Nozzle Temperature	280 to 300 °C
Processing (Melt) Temp	285 to 300 °C
Mold Temperature	65 to 95 °C

**Notes**

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

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