

# 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.

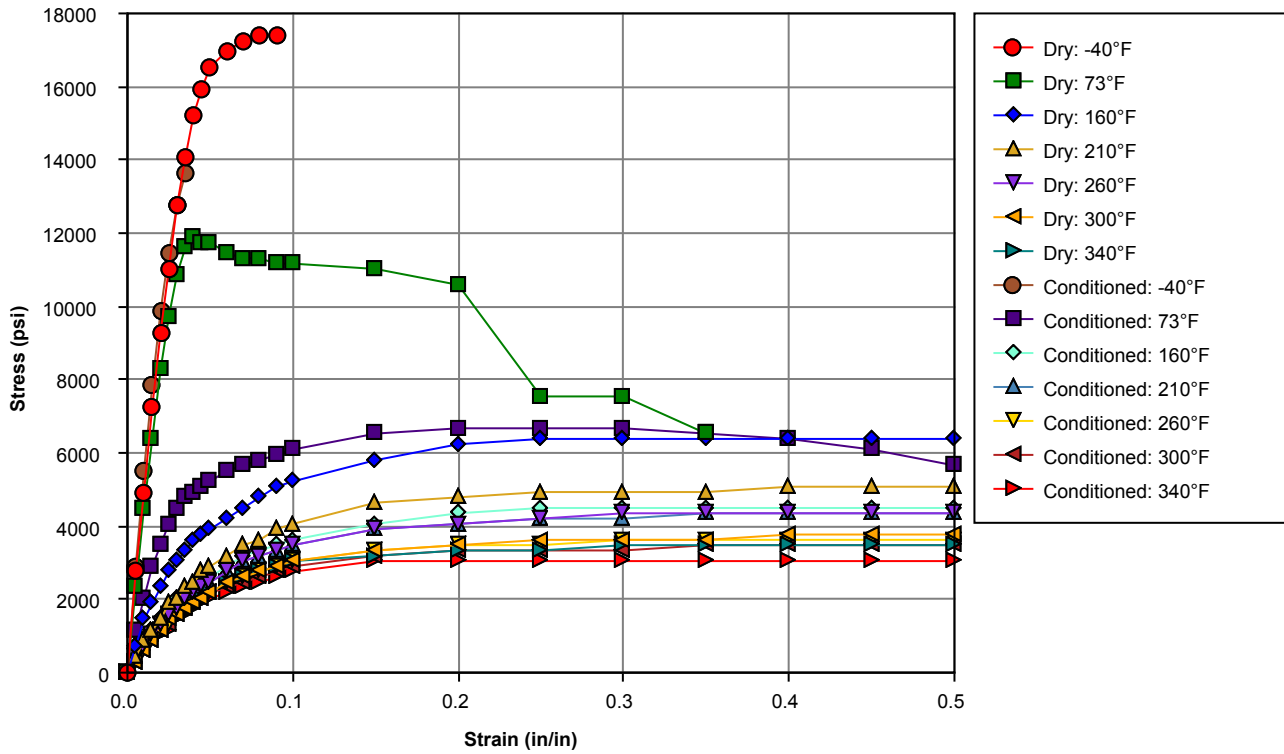
General			
Material Status	• Commercial: Active		
Availability	• Asia Pacific	• Europe	• North America
Additive	• Lubricant		
Features	<ul style="list-style-type: none"> <li>• Abrasion Resistant</li> <li>• Chemical Resistant</li> <li>• Fast Molding Cycle</li> <li>• Gasoline Resistant</li> <li>• General 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 : 73°F, 0.0787 in	1.7	--	%	
Flow : 73°F, 0.0787 in	1.8	--	%	
Water Absorption (73°F, 24 hr)	1.2	--	%	ISO 62
Water Absorption (Equilibrium, 73°F, 50% RH)	2.4	--	%	ISO 62
Outdoor Suitability (All Colors)	f2	--		UL 746C
Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Modulus (73°F)	450000	203000	psi	ISO 527-2
Tensile Stress (Yield, 73°F)	11900	7980	psi	ISO 527-2
Tensile Stress (Break, 73°F)	7980	6530	psi	ISO 527-2
Tensile Strain (Yield, 73°F)	5.0	25	%	ISO 527-2
Nominal Tensile Strain at Break (73°F)	25	> 50	%	ISO 527-2
Flexural Modulus (73°F)	421000	218000	psi	ISO 178
Flexural Strength (73°F)	11600	7250	psi	ISO 178
Poisson's Ratio	0.40	--		ISO 527
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	9.5	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	9.5	ft·lb/in <sup>2</sup>	

Thermal	Dry	Conditioned	Unit	Test Method
Heat Deflection Temperature 66 psi, Unannealed	392	--	°F	ISO 75-2/B
Heat Deflection Temperature 264 psi, Unannealed	158	--	°F	ISO 75-2/A
Melting Temperature	500	--	°F	ISO 11357-3
CLTE - Flow (73 to 131°F)	5.6E-5	--	in/in/°F	ISO 11359-2
CLTE - Transverse (73 to 131°F)	5.6E-5	--	in/in/°F	ISO 11359-2
RTI Elec				UL 746
0.016 in	266	--	°F	
0.028 in	266	--	°F	
0.06 in	266	--	°F	
0.12 in	266	--	°F	
RTI Imp				UL 746
0.016 in	167	--	°F	
0.028 in	167	--	°F	
0.06 in	167	--	°F	
0.12 in	167	--	°F	
RTI Str				UL 746
0.016 in	167	--	°F	
0.028 in	185	--	°F	
0.06 in	185	--	°F	
0.12 in	185	--	°F	

Electrical	Dry	Conditioned	Unit	Test Method
Volume Resistivity (0.0295 in)	1.0E+13	--	ohms-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
0.016 in	PLC 1	--		
0.028 in	PLC 0	--		
0.06 in	PLC 0	--		
0.12 in	PLC 0	--		
High Voltage Arc Tracking Rate (HVTR)	PLC 0	--		UL 746
Hot-wire Ignition (HWI)				UL 746
0.016 in	PLC 4	--		
0.028 in	PLC 4	--		
0.06 in	PLC 3	--		
0.12 in	PLC 2	--		
Flammability	Dry	Conditioned	Unit	Test Method
Flame Rating				UL 94
0.016 in	V-2	--		
0.028 in	V-2	--		
0.06 in	V-2	--		
0.12 in	V-2	--		
Glow Wire Flammability Index				IEC 60695-2-12
0.016 in	1760	--	°F	
0.028 in	1760	--	°F	
0.06 in	1760	--	°F	
0.12 in	1760	--	°F	
Glow Wire Ignition Temperature				IEC 60695-2-13
0.016 in	1520	--	°F	
0.028 in	1560	--	°F	
0.06 in	1560	--	°F	
0.12 in	1560	--	°F	
Oxygen Index	25	--	%	ISO 4589-2

Isothermal Stress vs. Strain (ISO 11403-1)



Injection	Dry Unit
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.

<sup>1</sup> Typical properties: these are not to be construed as specifications.



**North America**

+1 888 927 2363

**Europe**

+32 10 608 600

**Asia**

+86 21 6340 3300

**Disclaimer of Warranty and Liability**

NOTICE: Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, Ascend Performance Materials Operations LLC makes no representations or warranties as to the completeness or accuracy thereof.

Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Ascend Performance Materials Operations LLC be responsible for damages of any nature whatsoever resulting from the use of or reliance upon information or the products to which information refers. Nothing contained herein is to be construed as a recommendation to use any product, equipment or formulation in conflict with any patent, and Ascend Performance Materials Operations LLC makes no representation or warranty, express or implied, that use thereof will not infringe any patent. No representations or warranties, either express or implied, of merchantability, fitness for a particular purpose or of any other nature are made hereunder with respect to information or the product to which information refers.