

# Vydyne® R533 NAT

## polyamide 66



Vydyne R533 NAT is general-purpose, 33% glass-fiber reinforced PA66 resin. Available in natural, it is an injection-molding grade that is lubricated for good machine feed, flow and mold release.

Glass-reinforced Vydyne resins provide higher heat distortion temperature, resistance to creep and better dimensional stability when compared with unreinforced PA66. These products have good chemical resistance to a broad range of chemicals including gasoline, hydraulic fluids and most solvents.

Vydyne R533 NAT resin has tensile strength and modulus properties just below aluminum and zinc and can replace these metals in numerous applications due to an excellent balance of properties. Reduction in production costs, energy consumption and part weight are key advantages of Vydyne glass-fiber reinforced PA66 resins over aluminum and/or zinc die-cast parts.

General				
Material Status	• Commercial: Active			
Availability	• Asia Pacific	• Europe	• North America	
Filler / Reinforcement	• Glass Fiber, 33% Filler by Weight			
Additive	• Lubricant			
Features	• Chemical Resistant • Corrosion Resistant • Good Dimensional Stability • Good Electrical Properties	• Good Flow • Good Mold Release • Heat Stabilized • High Rigidity	• High Strength • Lubricated • Non-Corrosive	
Uses	• Appliance Components • Automotive Applications • Electrical/Electronic Applications	• Engineered Applications • Gears • Lighting Applications	• Power/Other Tools • Thin-walled Parts	
Agency Ratings	• ASTM D4066 PA011G35 • ASTM D6779 PA011G35 • EC 1935/2004	• EU 10/2011 • EU 2023/2006 • FDA 21 CFR 177.1500	• NSF STD-51	
Automotive Specifications	• CHRYSLER MS-DB-41 CPN1853			
UL File Number	• E70062			
Appearance	• Natural Color			
Forms	• Pellets			
Processing Method	• Injection Molding			

Physical	Dry	Conditioned	Unit	Test Method
Density	1.40	--	g/cm <sup>3</sup>	ISO 1183
Molding Shrinkage				ISO 294-4
Across Flow : 23°C, 2.00 mm	0.90	--	%	
Flow : 23°C, 2.00 mm	0.40	--	%	
Water Absorption				ISO 62
24 hr, 23°C	0.80	--	%	
Equilibrium, 23°C, 50% RH	1.7	--	%	

Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Modulus (23°C)	10600	7900	MPa	ISO 527-2
Tensile Stress (Break, 23°C)	205	145	MPa	ISO 527-2
Tensile Strain (Break, 23°C)	3.0	5.0	%	ISO 527-2
Flexural Modulus (23°C)	10200	6500	MPa	ISO 178
Flexural Stress (23°C)	290	200	MPa	ISO 178
Poisson's Ratio	0.40	--		ISO 527-2
Impact	Dry	Conditioned	Unit	Test Method
Charpy Notched Impact Strength				ISO 179
-30°C	10	12	kJ/m <sup>2</sup>	
23°C	11	14	kJ/m <sup>2</sup>	
Charpy Unnotched Impact Strength				ISO 179
-30°C	70	85	kJ/m <sup>2</sup>	
23°C	80	90	kJ/m <sup>2</sup>	
Notched Izod Impact Strength				ISO 180
-30°C	10	12	kJ/m <sup>2</sup>	
23°C	12	14	kJ/m <sup>2</sup>	
Thermal	Dry	Conditioned	Unit	Test Method
Heat Deflection Temperature				
0.45 MPa, Unannealed	260	--	°C	ISO 75-2/B
1.8 MPa, Unannealed	250	--	°C	ISO 75-2/A
Melting Temperature	260	--	°C	ISO 11357-3
CLTE				ISO 11359-2
Flow : 23 to 55°C, 2.00 mm	2.1E-5	--	cm/cm/°C	
Transverse : 23 to 55°C, 2.00 mm	1.1E-4	--	cm/cm/°C	
RTI Elec				UL 746
0.75 mm	120	--	°C	
1.5 mm	120	--	°C	
3.0 mm	120	--	°C	
RTI Imp				UL 746
0.75 mm	100	--	°C	
1.5 mm	100	--	°C	
3.0 mm	105	--	°C	
RTI Str				UL 746
0.75 mm	125	--	°C	
1.5 mm	125	--	°C	
3.0 mm	125	--	°C	

Electrical	Dry	Conditioned	Unit	Test Method
Volume Resistivity (3.00 mm)	1.0E+14	--	ohms-cm	IEC 60093
Dielectric Strength (1.00 mm)	20	--	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
0.75 mm	PLC 0	--		
1.5 mm	PLC 0	--		
3.0 mm	PLC 0	--		
High Voltage Arc Tracking Rate (HVTR)	PLC 1	--		UL 746
Hot-wire Ignition (HWI)				UL 746
0.75 mm	PLC 4	--		
1.5 mm	PLC 4	--		
3.0 mm	PLC 3	--		
Flammability	Dry	Conditioned	Unit	Test Method
Flame Rating				UL 94
0.75 mm	HB	--		
1.5 mm	HB	--		
3.0 mm	HB	--		
Glow Wire Flammability Index				IEC 60695-2-12
0.75 mm	750	--	°C	
1.5 mm	725	--	°C	
3.0 mm	800	--	°C	
Glow Wire Ignition Temperature				IEC 60695-2-13
0.75 mm	775	--	°C	
1.5 mm	725	--	°C	
3.0 mm	750	--	°C	
Injection	Dry Unit			
Drying Temperature	80 °C			
Drying Time	4.0 hr			
Suggested Max Regrind	50 %			
Rear Temperature	280 to 310 °C			
Middle Temperature	280 to 310 °C			
Front Temperature	280 to 310 °C			
Nozzle Temperature	280 to 310 °C			
Processing (Melt) Temp	285 to 305 °C			
Mold Temperature	65 to 95 °C			

Notes

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

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North America  
+1 888 927 2363

Europe  
+32 10 608 600

Asia  
+86 21 2315 0888

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