

# Vydyne® R633H05

## polyamide 66/6 copolymer



Vydyne R633H05 is 33% glass-fiber reinforced PA66/6 copolymer resin for superior surface appearance. Available in black, this injection-molding grade resin is lubricated for machine feed and mold release.

Vydyne R633H05 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-reinforced PA66/6 resins over aluminum and/or zinc die-cast parts.

Vydyne R633H05 is specially formulated to minimize the oxidative and thermal degradation of the PA66/6 copolymer when exposed to elevated temperatures for extended periods of time. Product provides improved retention of physical properties under exposure to longterm heat.

Vydyne R633H05 provides a higher heat distortion temperature, better resistance to creep, higher impact and better dimensional stability compared with unreinforced PA66/6. This product also provides a combination of excellent surface appearance with high tensile and modulus properties. This property balance enables usage of Vydyne R633H05 in applications where aesthetics and performance are important.

### Typical Applications/End Uses:

Vydyne R633H05 resin has been used for many under-the-hood automotive applications, motor housings for power tools, and garden appliances. These resins have also been used in miscellaneous brackets, gears and clips that require high rigidity and strength.

General			
Material Status	• Commercial: Active		
Availability	• Asia Pacific	• Europe	• North America
Filler / Reinforcement	• Glass Fiber, 33% Filler by Weight		
Additive	• Heat Stabilizer	• Lubricant	
Features	• Copolymer • Good Mold Release	• Good Surface Finish • Heat Stabilized	• High Tensile Strength • Lubricated
Uses	• Automotive Under the Hood • Gears	• Housings • Lawn and Garden Equipment	• Metal Replacement • Power/Other Tools
Agency Ratings	• ASTM D 4066 PA112G35	• ASTM D 6779 PA082G35	
Automotive Specifications	• ASTM D4066 PA111 • CHRYSLER MS-DB-41 CPN3275 • CHRYSLER MS-DB-41 CPN4005 Color: Black • FEDERAL LP410A	• FORD ESB-M4D133-A • FORD ESL-M4D533-A • GM GMP.PA66/6.002 Color: Black • GM GMP.PA66/6.002 Color: Natural	• GM GMP.PA66/6.004 Color: Black • GM GMP.PA66/6.004 Color: Natural • SAE J1639 PA1816 • SAE J1639 PA1816 Z6
UL File Number	• E70062		
Appearance	• Black		
Forms	• Pellets		
Processing Method	• Injection Molding		

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Physical	Dry	Conditioned	Unit	Test Method
Density	1.39	--	g/cm <sup>3</sup>	ISO 1183
Molding Shrinkage				ISO 294-4
Across Flow : 73°F, 0.0787 in	0.90	--	%	
Flow : 73°F, 0.0787 in	0.40	--	%	
Water Absorption (73°F, 24 hr)	1.3	--	%	ISO 62
Water Absorption (Equilibrium, 73°F, 50% RH)	2.3	--	%	ISO 62
Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Modulus (73°F)	1.57E+6	1.16E+6	psi	ISO 527-2
Tensile Stress (Break, 73°F)	26700	18900	psi	ISO 527-2
Tensile Strain (Break, 73°F)	4.0	6.0	%	ISO 527-2
Flexural Modulus (73°F)	1.28E+6	986000	psi	ISO 178
Flexural Strength (73°F)	37000	28300	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	5.1	7.1	ft·lb/in <sup>2</sup>	
73°F	5.6	12	ft·lb/in <sup>2</sup>	
Charpy Unnotched Impact Strength				ISO 179/1eU
-22°F	21	43	ft·lb/in <sup>2</sup>	
73°F	24	44	ft·lb/in <sup>2</sup>	
Notched Izod Impact Strength				ISO 180
-22°F	5.7	9.0	ft·lb/in <sup>2</sup>	
73°F	6.2	10	ft·lb/in <sup>2</sup>	
Thermal	Dry	Conditioned	Unit	Test Method
Heat Deflection Temperature				ISO 75-2/B
66 psi, Unannealed	446	--	°F	
Heat Deflection Temperature				ISO 75-2/A
264 psi, Unannealed	428	--	°F	
Melting Temperature	451	--	°F	ISO 11357-3
CLTE - Flow (73 to 131°F, 0.0787 in)	8.3E-6	--	in/in/°F	ISO 11359-2
CLTE - Transverse (73 to 131°F, 0.0787 in)	5.6E-5	--	in/in/°F	ISO 11359-2

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Electrical	Dry	Conditioned	Unit	Test Method
Arc Resistance (0.118 in)	PLC 5	--		ASTM D495
Comparative Tracking Index (0.118 in)	250 to 399	--	V	IEC 60112
High Amp Arc Ignition (HAI)				UL 746
0.0295 in	PLC 0	--		
0.0591 in	PLC 0	--		
0.118 in	PLC 0	--		
High Voltage Arc Tracking Rate (HVTR)	PLC 2	--		UL 746
Hot-wire Ignition (HWI)				UL 746
0.0295 in	PLC 4	--		
0.0591 in	PLC 4	--		
0.118 in	PLC 3	--		
Flammability	Dry	Conditioned	Unit	Test Method
Flame Rating				UL 94
0.0295 in	HB	--		
0.0591 in	HB	--		
0.118 in	HB	--		
Injection		Dry	Unit	
Drying Temperature				176 °F
Drying Time				4.0 hr
Suggested Max Regrind				25 %
Rear Temperature				536 to 590 °F
Middle Temperature				536 to 590 °F
Front Temperature				536 to 590 °F
Nozzle Temperature				536 to 590 °F
Processing (Melt) Temp				545 to 581 °F
Mold Temperature				149 to 203 °F

## Notes

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

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