

# Vydyne® R543H Natural polyamide 66



Vydyne R543H Natural is general-purpose, hydrolysis-resistant, 43% glass-fiber reinforced PA66 resin. Available in natural, it is an injection-molding grade resin that is lubricated for machine feed, flow and mold release.

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

Vydyne R543H Natural 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-reinforced PA66 resins over aluminum and/ or zinc die-cast parts.

Vydyne R543H Natural is formulated to minimize the oxidative and thermal degradation of the PA66 polymer when exposed to elevated temperatures for extended periods of time. Vydyne R543H Natural provides improved retention of physical properties under exposure to long-term heat. The continuous operating use temperature is 275°F, with short-term peak temperatures as high as 475°F.

Typical Applications/End Uses:  
To come

General	
Material Status	<ul style="list-style-type: none"> <li>Commercial: Active</li> </ul>
Availability	<ul style="list-style-type: none"> <li>Asia Pacific</li> <li>Europe</li> <li>North America</li> </ul>
Filler / Reinforcement	<ul style="list-style-type: none"> <li>Glass Fiber, 43% Filler by Weight</li> </ul>
Additive	<ul style="list-style-type: none"> <li>Heat Stabilizer</li> <li>Lubricant</li> </ul>
Features	<ul style="list-style-type: none"> <li>Gasoline Resistance</li> <li>Good Chemical Resistance</li> <li>Good Creep Resistance</li> <li>Good Dimensional Stability</li> <li>Good Flow</li> <li>Good Impact Resistance</li> <li>Good Mold Release</li> <li>Grease Resistant</li> <li>Heat Stabilized</li> <li>High Rigidity</li> <li>High Strength</li> <li>High Tensile Strength</li> <li>Hydrolysis Resistant</li> <li>Lubricated</li> <li>Oil Resistant</li> <li>Solvent Resistant</li> </ul>
Uses	<ul style="list-style-type: none"> <li>Automotive Under the Hood</li> <li>Gears</li> <li>Housings</li> <li>Lawn and Garden Equipment</li> <li>Power/Other Tools</li> </ul>
Agency Ratings	<ul style="list-style-type: none"> <li>ASTM D 4066 PA012G45</li> <li>ASTM D 6779 PA012G45</li> </ul>
Automotive Specifications	<ul style="list-style-type: none"> <li>CHRYSLER MS-DB-41 CPN2508 Color: Black</li> <li>FORD ESF-M4D335-A</li> <li>GM GMP.PA66.025</li> <li>TOYOTA TSM 5603G-2C</li> </ul>
UL File Number	<ul style="list-style-type: none"> <li>E70062</li> </ul>
Appearance	<ul style="list-style-type: none"> <li>Natural Color</li> </ul>
Forms	<ul style="list-style-type: none"> <li>Pellets</li> </ul>
Processing Method	<ul style="list-style-type: none"> <li>Injection Molding</li> </ul>

Physical	Dry	Conditioned	Unit	Test Method
Density	1.50	--	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)	0.60	--	%	ISO 62
Water Absorption (Equilibrium, 73°F, 50% RH)	1.5	--	%	ISO 62
Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Modulus (73°F)	2.15E+6	1.64E+6	psi	ISO 527-2
Tensile Stress (Break, 73°F)	32600	24700	psi	ISO 527-2
Tensile Strain (Break, 73°F)	3.0	4.0	%	ISO 527-2
Flexural Modulus (73°F)	1.81E+6	1.36E+6	psi	ISO 178
Flexural Stress (73°F)	49300	36300	psi	ISO 178
Poisson's Ratio	0.40	--		ISO 527-2
Impact	Dry	Conditioned	Unit	Test Method
Charpy Notched Impact Strength				ISO 179
-22°F	6.2	6.7	ft·lb/in <sup>2</sup>	
73°F	6.7	9.5	ft·lb/in <sup>2</sup>	
Charpy Unnotched Impact Strength				ISO 179
-22°F	41	43	ft·lb/in <sup>2</sup>	
73°F	44	45	ft·lb/in <sup>2</sup>	
Notched Izod Impact Strength				ISO 180
-22°F	6.2	6.2	ft·lb/in <sup>2</sup>	
73°F	6.2	9.0	ft·lb/in <sup>2</sup>	

Thermal	Dry	Conditioned	Unit	Test Method
Heat Deflection Temperature 66 psi, Unannealed	500	--	°F	ISO 75-2/B
Heat Deflection Temperature 264 psi, Unannealed	486	--	°F	ISO 75-2/A
Melting Temperature	500	--	°F	ISO 11357-3
CLTE - Flow (73 to 131°F, 0.0787 in)	8.9E-6	--	in/in/°F	ISO 11359-2
CLTE - Transverse (73 to 131°F, 0.0787 in)	5.7E-5	--	in/in/°F	ISO 11359-2
RTI Elec				UL 746
0.0295 in	284	--	°F	
0.0591 in	284	--	°F	
0.118 in	284	--	°F	
RTI Imp				UL 746
0.0295 in	266	--	°F	
0.0591 in	266	--	°F	
0.118 in	266	--	°F	
RTI Str				UL 746
0.0295 in	284	--	°F	
0.0591 in	284	--	°F	
0.118 in	284	--	°F	
Electrical	Dry	Conditioned	Unit	Test Method
Volume Resistivity (0.0295 in)	1.0E+12	--	ohm-cm	IEC 60093
Dielectric Strength (0.0394 in)	510	--	V/mil	IEC 60243
Arc Resistance (0.118 in)	PLC 5	--		ASTM D495
Comparative Tracking Index (0.118 in)	400 to 599	--	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 1	--		UL 746
Hot-wire Ignition (HWI)				UL 746
0.0295 in	PLC 4	--		
0.0591 in	PLC 3	--		
0.118 in	PLC 4	--		

Flammability	Dry	Conditioned	Unit	Test Method
Flame Rating				UL 94
0.0295 in	HB	--		
0.0591 in	HB	--		
0.118 in	HB	--		
Glow Wire Flammability Index				IEC 60695-2-12
0.0295 in	1250	--	°F	
0.0591 in	1250	--	°F	
0.118 in	1760	--	°F	
Glow Wire Ignition Temperature				IEC 60695-2-13
0.0295 in	1290	--	°F	
0.0591 in	1290	--	°F	
0.118 in	1380	--	°F	
Oxygen Index	25	--	%	ISO 4589-2
Additional Information	Dry	Conditioned	Unit	Test Method
Automotive Materials - (thickness d = 1mm)	+	--		FMVSS 302
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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