

Vydyne® R513H

polyamide 66



Vydyne R513H is general-purpose, 13% glass-fiber reinforced, heat-stabilized 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. This product has 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 R513H 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 R513H is heat-stabilized and formulated to minimize the oxidative and thermal degradation of the PA66 polymer when exposed to elevated temperatures for extended periods of time. Vydyne R513H 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:

Vydyne R513H resin has been used for many under-the-hood automotive applications, motor housings for power tools and garden appliances. This resin has also been used in miscellaneous brackets, gears and clips, which require high rigidity and strength.

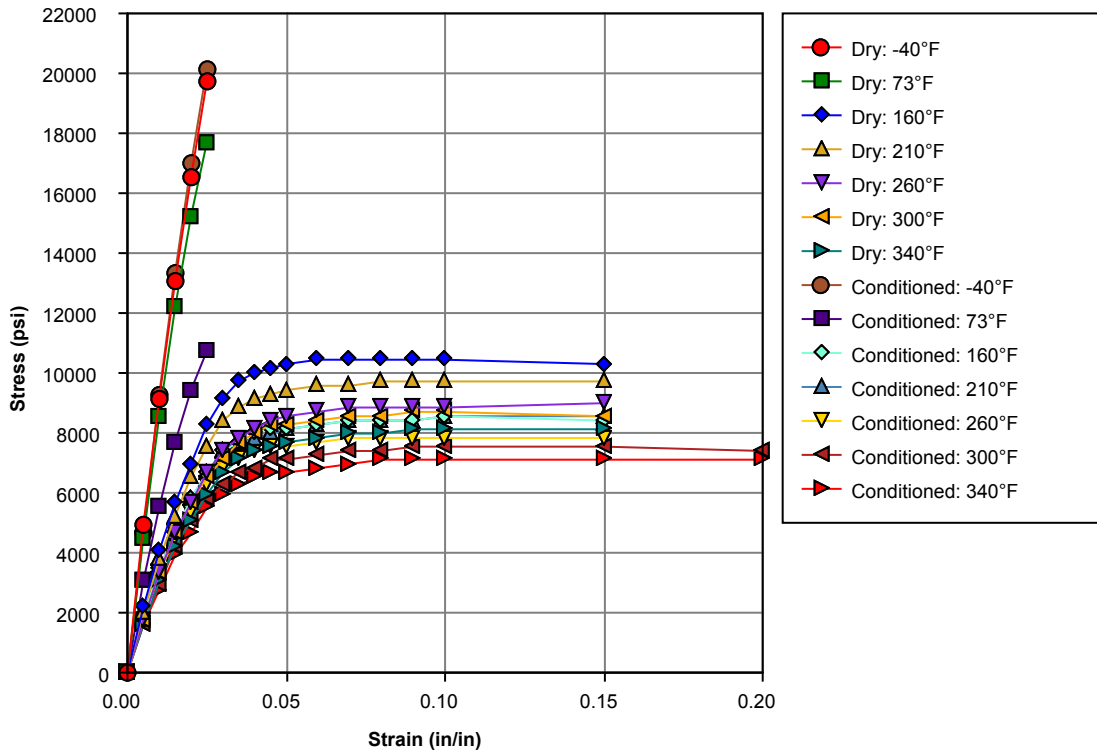
General			
Material Status	• Commercial: Active		
Availability	• Asia Pacific	• Europe	• North America
Filler / Reinforcement	• Glass Fiber, 13% Filler by Weight		
Additive	• Heat Stabilizer	• Lubricant	
Features	• Gasoline Resistance • Good Chemical Resistance • Good Flow • Good Mold Release	• Grease Resistant • Heat Stabilized • High Rigidity • High Strength	• Lubricated • Oil Resistant • Solvent Resistant
Uses	• Automotive Under the Hood • Gears	• Housings • Power/Other Tools	
Agency Ratings	• ASTM D 4066 PA0121G15	• ASTM D 6779 PA0121G15	
Automotive Specifications	• CHRYSLER MS-DB-41 CPN2239 • DAEWOO EDS-M-5161-11	• FORD ESA-M4D349-A Color: Natural • GM GMP.PA66.020	• SAE J1639 PA1112 Color: Natural
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	1.23	--	g/cm ³	ISO 1183
Molding Shrinkage				ISO 294-4
Across Flow : 73°F, 0.0787 in	1.0	--	%	
Flow : 73°F, 0.0787 in	0.50	--	%	
Water Absorption (73°F, 24 hr)	1.0	--	%	ISO 62
Water Absorption (Equilibrium, 73°F, 50% RH)	2.2	--	%	ISO 62
Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Modulus (73°F)	899000	566000	psi	ISO 527-2
Tensile Stress (Break, 73°F)	16700	10900	psi	ISO 527-2
Tensile Strain (Break, 73°F)	3.0	13	%	ISO 527-2
Flexural Modulus (73°F)	754000	457000	psi	ISO 178
Flexural Stress (73°F)	23900	15400	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	2.9	2.5	ft·lb/in ²	
73°F	2.9	3.6	ft·lb/in ²	
Charpy Unnotched Impact Strength				ISO 179
-22°F	15	18	ft·lb/in ²	
73°F	18	20	ft·lb/in ²	
Notched Izod Impact Strength				ISO 180
-22°F	2.4	2.6	ft·lb/in ²	
73°F	2.4	4.0	ft·lb/in ²	

Thermal	Dry	Conditioned	Unit	Test Method
Heat Deflection Temperature 66 psi, Unannealed	496	--	°F	ISO 75-2/B
Heat Deflection Temperature 264 psi, Unannealed	464	--	°F	ISO 75-2/A
Melting Temperature	500	--	°F	ISO 11357-3
CLTE - Flow (73 to 131°F, 0.0787 in)	1.7E-5	--	in/in/°F	ISO 11359-2
CLTE - Transverse (73 to 131°F, 0.0787 in)	6.3E-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	248	--	°F	
0.0591 in	248	--	°F	
0.118 in	248	--	°F	
RTI Str				UL 746
0.0295 in	257	--	°F	
0.0591 in	284	--	°F	
0.118 in	284	--	°F	
Electrical	Dry	Conditioned	Unit	Test Method
Volume Resistivity (0.0295 in)	1.0E+13	--	ohm-cm	IEC 60093
Dielectric Strength (0.0394 in)	510	--	V/mil	IEC 60243
Arc Resistance (0.118 in)	PLC 6	--		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 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	1250	--	°F	
Glow Wire Ignition Temperature				IEC 60695-2-13
0.0295 in	1290	--	°F	
0.0591 in	1290	--	°F	
0.118 in	1290	--	°F	
Oxygen Index	25	--	%	ISO 4589-2

Isothermal Stress vs. Strain (ISO 11403-1)



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

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