

Vydyne® R513H NAT

Polyamide 66

Ascend Performance Materials Operations LLC

Message:

Vydyne R513H NAT 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 NAT 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 NAT 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 NAT 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 NAT 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 Information	
UL YellowCard	E70062-249082
Filler / Reinforcement	Glass fiber reinforced material, 13% filler by weight
Additive	heat stabilizer
	Lubricant
Features	Rigidity, high
	High strength
	Solvent resistance
	Good liquidity
	Good chemical resistance
	Gasoline resistance
	Oil resistance
	Grease resistance
	Thermal Stability
	Lubrication
	Good demoulding performance
Uses	Gear
	Power/other tools
	Parts under the hood of a car
	Shell
Agency Ratings	ASTM D 4066 PA012G15
	ASTM D 6779 PA012G15
	EC 1935/2004

UL File Number		E70062		
Appearance		Natural color		
Forms		Particle		
Processing Method		Injection molding		
Physical	Dry	Conditioned	Unit	Test Method
Density	1.23	--	g/cm ³	ISO 1183
Molding Shrinkage				ISO 294-4
Lateral flow: 23°C, 2.00mm	1.0	--	%	ISO 294-4
Traffic: 23°C, 2.00mm	0.50	--	%	ISO 294-4
Water Absorption				ISO 62
23°C, 24 hr	1.0	--	%	ISO 62
Equilibrium, 23°C, 50% RH	2.2	--	%	ISO 62
Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Modulus (23°C)	6200	3900	MPa	ISO 527-2
Tensile Stress (Break, 23°C)	115	75.0	MPa	ISO 527-2
Tensile Strain (Break, 23°C)	3.0	13	%	ISO 527-2
Flexural Modulus (23°C)	5200	3150	MPa	ISO 178
Flexural Stress (23°C)	165	106	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	6.0	5.3	kJ/m ²	ISO 179
23°C	6.0	7.5	kJ/m ²	ISO 179
Charpy Unnotched Impact Strength				ISO 179
-30°C	31	37	kJ/m ²	ISO 179
23°C	38	42	kJ/m ²	ISO 179
Notched Izod Impact				ISO 180
-30°C	5.0	5.4	kJ/m ²	ISO 180
23°C	5.1	8.5	kJ/m ²	ISO 180
Thermal	Dry	Conditioned	Unit	Test Method
Heat Deflection Temperature				
0.45 MPa, not annealed	258	--	°C	ISO 75-2/B
1.8 MPa, not annealed	240	--	°C	ISO 75-2/A
Melting Temperature	260	--	°C	ISO 11357-3

Linear thermal expansion coefficient				ISO 11359-2
Flow: 23 to 55°C, 2.00mm	3.0E-5	--	cm/cm/°C	ISO 11359-2
Lateral: 23 to 55°C, 2.00mm	1.1E-4	--	cm/cm/°C	ISO 11359-2
RTI Elec				UL 746
0.75 mm	140	--	°C	UL 746
1.5 mm	140	--	°C	UL 746
3.0 mm	140	--	°C	UL 746
RTI Imp				UL 746
0.75 mm	120	--	°C	UL 746
1.5 mm	120	--	°C	UL 746
3.0 mm	120	--	°C	UL 746
RTI				UL 746
0.75 mm	125	--	°C	UL 746
1.5 mm	140	--	°C	UL 746
3.0 mm	140	--	°C	UL 746
Electrical	Dry	Conditioned	Unit	Test Method
Volume Resistivity (0.750 mm)	1.0E+13	--	ohms · cm	IEC 60093
Dielectric Strength (1.00 mm)	20	--	kV/mm	IEC 60243
Arc Resistance (3.00 mm)	PLC 6	--		ASTM D495
Comparative Tracking Index (3.00 mm)	250 - 399	--	V	IEC 60112
High Amp Arc Ignition (HAI)				UL 746
0.75 mm	PLC 0	--		UL 746
1.5 mm	PLC 0	--		UL 746
3.0 mm	PLC 0	--		UL 746
High Voltage Arc Tracking Rate (HVTR)				UL 746
PLC 1	--			UL 746
Hot-wire Ignition (HWI)				UL 746
0.75 mm	PLC 4	--		UL 746
1.5 mm	PLC 3	--		UL 746
3.0 mm	PLC 4	--		UL 746
Flammability	Dry	Conditioned	Unit	Test Method
Flame Rating				UL 94
0.75 mm	HB	--		UL 94
1.5 mm	HB	--		UL 94
3.0 mm	HB	--		UL 94
Glow Wire Flammability Index				IEC 60695-2-12
0.75 mm	675	--	°C	IEC 60695-2-12

1.5 mm	675	--	°C	IEC 60695-2-12
3.0 mm	675	--	°C	IEC 60695-2-12
Glow Wire Ignition Temperature				IEC 60695-2-13
0.75 mm	700	--	°C	IEC 60695-2-13
1.5 mm	700	--	°C	IEC 60695-2-13
3.0 mm	700	--	°C	IEC 60695-2-13
Oxygen Index	25	--	%	ISO 4589-2
Injection	Dry	Unit		
Drying Temperature	80		°C	
Drying Time	4.0		hr	
Suggested Max Regrind	25		%	
Rear Temperature	280 - 310		°C	
Middle Temperature	280 - 310		°C	
Front Temperature	280 - 310		°C	
Nozzle Temperature	280 - 310		°C	
Processing (Melt) Temp	285 - 305		°C	
Mold Temperature	65 - 95		°C	

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