



Vydyne® R543H Natural

Ascend Performance Materials Operations LLC - Polyamide 66

Monday, November 4, 2019

General Information

Product Description

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.

General

Material Status	• Commercial: Active		
Availability	• Asia Pacific	• Europe	• North America
Filler / Reinforcement	• Glass Fiber, 43% Filler by Weight		
Additive	• Heat Stabilizer	• Lubricant	
Features	• Chemical Resistant	• Good Mold Release	• Hydrolysis Resistant • Lubricated • Oil Resistant • Solvent Resistant
	• Creep Resistant	• Grease Resistant	
	• Gasoline Resistant	• Heat Stabilized	
	• Good Dimensional Stability	• High Rigidity	
	• Good Flow	• High Strength	
	• Good Impact Resistance	• High Tensile Strength	
Uses	• Automotive Under the Hood	• Housings	• Power/Other Tools
	• Gears	• Lawn and Garden Equipment	
Agency Ratings	• ASTM D4066 PA012G45	• EC 1935/2004	• EU 2023/2006
	• ASTM D6779 PA012G45	• EU 10/2011	• FDA 21 CFR 177.1500
Automotive Specifications	• FORD ESF-M4D335-A	• GM GMP.PA66.025	• TOYOTA TSM 5603G-2C
UL File Number	• E70062		
Appearance	• Natural Color		
Forms	• Pellets		
Processing Method	• Injection Molding		

ASTM & ISO Properties ¹

Physical	Dry	Conditioned	Unit	Test Method
Density	1.50	--	g/cm ³	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 (24 hr, 73°F)	0.60	--	%	ISO 62
Water Absorption				ISO 62
Equilibrium, 73°F, 50% RH	1.5	--	%	

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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 ²	
73°F	6.7	9.5	ft·lb/in ²	
Charpy Unnotched Impact Strength				ISO 179
-22°F	41	43	ft·lb/in ²	
73°F	44	45	ft·lb/in ²	
Notched Izod Impact Strength				ISO 180
-22°F	6.2	6.2	ft·lb/in ²	
73°F	6.2	9.0	ft·lb/in ²	
Thermal	Dry	Conditioned	Unit	Test Method
Heat Deflection Temperature				ISO 75-2/B
66 psi, Unannealed	500	--	°F	
Heat Deflection Temperature				ISO 75-2/A
264 psi, Unannealed	486	--	°F	
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
0.030 in	284	--	°F	
0.06 in	284	--	°F	
0.12 in	284	--	°F	
RTI Imp				UL 746
0.030 in	266	--	°F	
0.06 in	266	--	°F	
0.12 in	266	--	°F	
RTI Str				UL 746
0.030 in	284	--	°F	
0.06 in	284	--	°F	
0.12 in	284	--	°F	
Electrical	Dry	Conditioned	Unit	Test Method
Volume Resistivity (0.0295 in)	1.0E+12	--	ohms·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				IEC 60112
0.118 in	400 to 599	--	V	
High Amp Arc Ignition (HAI)				UL 746
0.030 in	PLC 0	--		
0.06 in	PLC 0	--		
0.12 in	PLC 0	--		
High Voltage Arc Tracking Rate (HVTR)	PLC 1	--		UL 746

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Electrical	Dry	Conditioned	Unit	Test Method
Hot-wire Ignition (HWI)				UL 746
0.030 in	PLC 4	--		
0.06 in	PLC 3	--		
0.12 in	PLC 4	--		
Flammability	Dry	Conditioned	Unit	Test Method
Flame Rating				UL 94
0.030 in	HB	--		
0.06 in	HB	--		
0.12 in	HB	--		
Glow Wire Flammability Index				IEC 60695-2-12
0.030 in	1250	--	°F	
0.06 in	1250	--	°F	
0.12 in	1760	--	°F	
Glow Wire Ignition Temperature				IEC 60695-2-13
0.030 in	1290	--	°F	
0.06 in	1290	--	°F	
0.12 in	1380	--	°F	
Oxygen Index	25	--	%	ISO 4589-2
Additional Information	Dry	Conditioned	Unit	Test Method
Automotive Materials - (thickness d = 1mm)	+	--		FMVSS 302

Processing Information

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

¹ Typical properties: these are not to be construed as specifications.