



Vydyne® R220

Ascend Performance Materials Operations LLC - Polyamide 66

Monday, November 4, 2019

General Information

Product Description

Vydyne R220 is a 40% mineral-reinforced PA66 resin formulated for improved impact strength. Available in natural, it is an injection-molding grade formulated to retain the inherent processing advantages of unreinforced PA66 while enhancing rigidity, strength and heat resistance. Vydyne R220 maintains the chemical resistance typical of PA66 to a wide variety of chemicals, gasoline, oils, greases and solvents.

Vydyne R220 resin utilizes a unique mineral-reinforced PA66 system developed by Ascend Performance Materials to satisfy the market need for a high-rigidity thermoplastic as an alternative to certain metals. This mineral system provides two key features:

- (1) isotropic behavior-property development in molded parts is usually independent of flow direction.
- (2) a reduction in the tendency to develop sink marks in heavy cross sections such as molded-in bosses and ribs.

While not sink-free, parts made from Vydyne R220 can often permit boss and rib design or wall cross section changes that would not be tolerable in other unreinforced thermoplastic materials. Thus Vydyne R220 resin offers more uniform molded part strength and performance, as well as wider latitude in part design.

Vydyne R220 resin is a workhorse of Ascend Performance Materials' full line of mineral-reinforced PA66 resins, providing the best overall balance of properties. Vydyne R220 is heat stabilized and designed to provide increased ductility and reduced melt viscosity vs. unreinforced materials. This ductility improvement results in tougher, more impact-resistant molded parts. The reduction in melt viscosity enhances overall ease of injection-molding, resulting in minor reductions in tensile strength, modulus and heat distortion temperature. Parts manufactured from Vydyne R220 have successfully withstood paint bake oven cycles without significant loss of either dimensional stability or part properties.

General

Material Status	• Commercial: Active		
Availability	• Asia Pacific	• Europe	• North America
Filler / Reinforcement	• Mineral, 40% Filler by Weight		
Additive	• Heat Stabilizer		
Features	• Chemical Resistant • Ductile • Gasoline Resistant • Good Impact Resistance	• Good Strength • Good Toughness • Grease Resistant • Heat Stabilized	• High Heat Resistance • High Rigidity • Oil Resistant • Solvent Resistant
Uses	• Automotive Exterior Parts • Automotive Under the Hood • Cams	• Gears • Housings • Industrial Applications	• Power/Other Tools
Agency Ratings	• ASTM D4066 PA114M40 • ASTM D6779 PA084M40		
Automotive Specifications	• CHRYSLER MS-DB-41 CPN 2310 • CHRYSLER MS-DB-41 CPN 3189	• DELPHI SD-2-214 Sec. 4.1 • FORD ESB-M4D353-A4	• GM GMP.PA66.007
UL File Number	• E70062		
Appearance	• Natural Color		
Forms	• Pellets		
Processing Method	• Injection Molding		

ASTM & ISO Properties ¹

Physical	Dry	Conditioned	Unit	Test Method
Density	1.48	--	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	1.1	--	%	

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Physical	Dry	Conditioned	Unit	Test Method
Water Absorption (24 hr, 73°F)	1.1	--	%	ISO 62
Water Absorption Equilibrium, 73°F, 50% RH	1.6	--	%	ISO 62
Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Modulus (73°F)	1.00E+6	377000	psi	ISO 527-2
Tensile Stress (Break, 73°F)	14900	10600	psi	ISO 527-2
Tensile Strain (Yield, 73°F)	1.5	16	%	ISO 527-2
Tensile Strain (Break, 73°F)	6.0	30	%	ISO 527-2
Flexural Modulus (73°F)	885000	334000	psi	ISO 178
Flexural Stress (73°F)	18000	7250	psi	ISO 178
Poisson's Ratio	0.40	--		ISO 527
Impact	Dry	Conditioned	Unit	Test Method
Charpy Notched Impact Strength				ISO 179
-22°F	2.9	3.8	ft·lb/in ²	
73°F	3.3	8.1	ft·lb/in ²	
Charpy Unnotched Impact Strength				ISO 179
-22°F	52	61	ft·lb/in ²	
73°F	68 ft·lb/in ²	No Break		
Notched Izod Impact Strength				ISO 180
-22°F	3.3	3.3	ft·lb/in ²	
73°F	4.3	7.6	ft·lb/in ²	
Thermal	Dry	Conditioned	Unit	Test Method
Heat Deflection Temperature 66 psi, Unannealed	432	--	°F	ISO 75-2/B
Heat Deflection Temperature 264 psi, Unannealed	244	--	°F	ISO 75-2/A
Melting Temperature	496	--	°F	ISO 11357-3
CLTE - Flow (73 to 131°F, 0.0787 in)	3.5E-4	--	in/in/°F	ISO 11359-2
CLTE - Transverse (73 to 131°F, 0.0787 in)	3.3E-4	--	in/in/°F	ISO 11359-2
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.