Amodel® A-6135 HS

polyphthalamide

Amodel® A-6135 HS polyphthalamide (PPA) is a 35% glass reinforced resin that is heat stabilized, lubricated and hot-water moldable. Key properties of the resin are high heat resistance, high strength and stiffness over a broad temperature range. It also exhibits low moisture absorption, excellent chemical resistance and excellent electrical properties.

Amodel® A-6135 HS resin is ideal for automotive electrical and electronic applications, including connectors, sockets, switches and sensors. It is also a good choice for under-hood enclosures that protect critical control systems such as anti-lock brakes, traction control, steering, electronic engine control, transmission and chassis control units.

- Natural A-6135 HS NT

General

Material Status	• Commercial: Active	
Availability	• Africa & Middle East • Asia Pacific • Europe	• Latin America • North America
Filler / Reinforcement	• Glass Fiber, 35% Filler by Weight	
Additive	• Heat Stabilizer	
Features	• Chemical Resistant • Creep Resistant • Good Flow • Good Stiffness • Heat Stabilized	• High Heat Resistance • High Stiffness • High Strength • Hot Water Moldability • Low Moisture Absorption
Uses	• Automotive Applications • Automotive Electronics • Automotive Under the Hood • Connectors • Electrical Housing • Electrical/Electronic Applications • General Purpose • Housings	• Industrial Applications • Industrial Parts • Lawn and Garden Equipment • Machine/Mechanical Parts • Metal Replacement • Power/Other Tools • Valves/Valve Parts
RoHS Compliance	• Contact Manufacturer	
Automotive Specifications	• ASTM D6779 PA101G35 • DELPHI M-2396 M2396202 Color: 202 Black, BK-324 • GM GMP.PPA.021 Color: Black	• GM GMP.PPA.021 Color: Natural • GM GMW16362P-PPA-GF35 Color: Black
Appearance	• Natural Color	
Forms	• Pellets	
Processing Method	• Water-Heated Mold Injection Molding	

Physical	Dry	Conditioned	Unit	Test method
Density	1.45	--	g/cm³	ISO 1183/A

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Physical	Dry	Conditioned	Unit	Test method
Molding Shrinkage				
Flow	0.60	--	%	ASTM D955
Across Flow	0.90	--	%	ASTM D955
Across Flow	1.0	--	%	ISO 294-4
Flow	0.50	--	%	ISO 294-4
Water Absorption				
24 hr	0.30	--	%	ASTM D570
24 hr, 23°C	0.29	--	%	ISO 62

Mechanical	Dry	Conditioned	Unit	Test method
Tensile Modulus				
--	13800	12200	MPa	ASTM D638
23°C	11500	--	MPa	ISO 527-2
100°C	7310	--	MPa	ISO 527-2
150°C	6270	--	MPa	ISO 527-2
175°C	5310	--	MPa	ISO 527-2
Tensile Stress				
Break, 23°C	211	--	MPa	ISO 527-2
Break, 100°C	121	--	MPa	ISO 527-2
Break, 150°C	92.4	--	MPa	ISO 527-2
Break, 175°C	82.0	--	MPa	ISO 527-2
--	203	176	MPa	ASTM D638
Tensile Elongation				
Break	1.9	2.1	%	ASTM D638
Break, 23°C	2.0	--	%	ISO 527-2
Break, 100°C	4.3	--	%	ISO 527-2
Break, 150°C	4.9	--	%	ISO 527-2
Break, 175°C	4.7	--	%	ISO 527-2
Flexural Modulus				
--	11400	11000	MPa	ASTM D790
23°C	11400	--	MPa	ISO 178
100°C	6600	--	MPa	ISO 178
150°C	4900	--	MPa	ISO 178
175°C	4600	--	MPa	ISO 178
Flexural Strength				
--	310	249	MPa	ASTM D790
3.5% Strain, 23°C	300	--	MPa	ISO 178
3.5% Strain, 100°C	170	--	MPa	ISO 178
3.5% Strain, 150°C	123	--	MPa	ISO 178
3.5% Strain, 175°C	112	--	MPa	ISO 178
Compressive Strength	148	--	MPa	ASTM D695
Shear Strength	87.6	73.8	MPa	ASTM D732
Poisson's Ratio	0.39	--		ASTM E132

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Impact	Dry	Conditioned	Unit	Test method
Charpy Notched Impact Strength (23°C)	9.2	--	kJ/m²	ISO 179/1eA
Charpy Unnotched Impact Strength (23°C)	60	--	kJ/m²	ISO 179/1eU
Notched Izod Impact				
--	85	69	J/m	ASTM D256
23°C	9.1	--	kJ/m²	ISO 180
Unnotched Izod Impact				
--	800	--	J/m	ASTM D256
23°C	62	--	kJ/m²	ISO 180

Hardness	Dry	Conditioned	Unit	Test method
Rockwell Hardness (R-Scale)	125	--		ASTM D785

Thermal	Dry	Conditioned	Unit	Test method
Heat Deflection Temperature				
0.45 MPa, Unannealed	303	--	°C	ISO 75-2/B
1.8 MPa, Unannealed	288	--	°C	ISO 75-2/A
1.8 MPa, Annealed, 3.20 mm	291	--	°C	ASTM D648
Melting Temperature	310	--	°C	ASTM D570 ISO 11357-3
CLTE				ASTM E831
Flow : 0 to 100°C	2.2E-5	--	cm/cm/°C	
Flow : 100 to 200°C	1.6E-5	--	cm/cm/°C	
Transverse : 0 to 100°C	6.1E-5	--	cm/cm/°C	
Transverse : 100 to 200°C	1.0E-4	--	cm/cm/°C	

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Injection	Dry	Unit
Drying Temperature	120	°C
Drying Time	4.0	hr
Suggested Max Moisture	0.030 to 0.060	%
Rear Temperature	316 to 321	°C
Front Temperature	327 to 332	°C
Processing (Melt) Temp	321 to 335	°C
Mold Temperature	66 to 93	°C

Injection Notes

Injection Rate: 3 to 6 in/sec

Holding Pressure: 50% of injection pressure

Storage:

- Amodel® PPA compounds are shipped in moisture-resistant packages at moisture levels according to specifications. Sealed, undamaged bags should be preferably stored in a dry room at a maximum temperature of 50°C (122°F) and should be protected from possible damage. If only a portion of a package is used, the remaining material should be transferred into a sealable container. It is recommended that Amodel® resins be dried prior to molding following the recommendations found in this datasheet and/or in the Amodel® PPA processing guide.

Notes

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

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