

# 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.

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

Amodel® A-6135 HS resin is ideal for automotive electrical and electronic applications, including connectors, sockets,

### 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/cm <sup>3</sup>	ISO 1183/A

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Physical	Dry	Conditioned	Unit	Test method
<b>Molding Shrinkage</b>				
Flow	0.60	--	%	ASTM D955
Across Flow	0.90	--	%	ASTM D955
Across Flow	1.0	--	%	ISO 294-4
Flow	0.50	--	%	ISO 294-4
<b>Water Absorption</b>				
24 hr	0.30	--	%	ASTM D570
24 hr, 23°C	0.29	--	%	ISO 62
Mechanical	Dry	Conditioned	Unit	Test method
<b>Tensile Modulus</b>				
--	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
<b>Tensile Stress</b>				
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
<b>Tensile Elongation</b>				
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
<b>Flexural Modulus</b>				
--	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
<b>Flexural Strength</b>				
--	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
<b>Compressive Strength</b>				
	148	--	MPa	ASTM D695
<b>Shear Strength</b>				
	87.6	73.8	MPa	ASTM D732
<b>Poisson's Ratio</b>				
	0.39	--		ASTM E132

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Impact	Dry	Conditioned	Unit	Test method
Charpy Notched Impact Strength (23°C)	9.2	--	kJ/m <sup>2</sup>	ISO 179/1eA
Charpy Unnotched Impact Strength (23°C)	60	--	kJ/m <sup>2</sup>	ISO 179/1eU
Notched Izod Impact				
--	85	69	J/m	ASTM D256
23°C	9.1	--	kJ/m <sup>2</sup>	ISO 180
Unnotched Izod Impact				
--	800	--	J/m	ASTM D256
23°C	62	--	kJ/m <sup>2</sup>	ISO 180
<b>Hardness</b>	<b>Dry</b>	<b>Conditioned</b>	<b>Unit</b>	<b>Test method</b>
Rockwell Hardness (R-Scale)	125	--		ASTM D785
<b>Thermal</b>	<b>Dry</b>	<b>Conditioned</b>	<b>Unit</b>	<b>Test method</b>
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.



Safety Data Sheets (SDS) are available by emailing us or contacting your sales representative. Always consult the appropriate SDS before using any of our products.

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