

# Amodel® AS-1935 HS

## polyphthalamide

Amodel® AS-1935 HS is a 35% glass reinforced grade of polyphthalamide (PPA) resin developed specifically for improved performance in a 50/50 ethylene glycol and water environment. This material exceeds the performance required by the automotive industry for polymeric materials

exposed to antifreeze at 226°F (108°C), even when tested at 275°F (135°C).

- Black: AS-1935 HS BK 328

### 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	• Antifreeze Resistant • Chemical Resistant • Creep Resistant • Good Dimensional Stability • Good Glycol Resistance	• Good Stiffness • Heat Stabilized • High Heat Resistance • High Strength
Uses	• Automotive Applications • Automotive Under the Hood • Housings • Industrial Applications • Industrial Parts	• Machine/Mechanical Parts • Metal Replacement • Power/Other Tools • Thick-walled Parts • Valves/Valve Parts
RoHS Compliance	• RoHS Compliant	
Automotive Specifications	• FORD WSS-M4D861-A3	• HYUNDAI MS211-19 AS-1935 HS Color: BK 238 Black
Appearance	• Black	
Forms	• Pellets	
Processing Method	• Injection Molding	

Physical	Typical Value	Unit	Test method
Density	1.49	g/cm <sup>3</sup>	ISO 1183/A
Molding Shrinkage			ASTM D955
Flow	0.20	%	
Across Flow	0.60	%	
Water Absorption (24 hr, 23°C, 4.00 mm)	0.10	%	ISO 62

Mechanical	Typical Value	Unit	Test method
Tensile Modulus			
--	12500	MPa	ASTM D638
--	12600	MPa	ISO 527-2/1A/1
Tensile Strength			
Break	205	MPa	ASTM D638
Break	210	MPa	ISO 527-2

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Mechanical	Typical Value	Unit	Test method
Tensile Elongation (Break)	2.2	%	ASTM D638 ISO 527-2
Flexural Modulus			
--	11300	MPa	ASTM D790
--	11500	MPa	ISO 178
Flexural Stress			
--	300	MPa	ISO 178
Break	275	MPa	ASTM D790
Impact	Typical Value	Unit	Test method
Charpy Notched Impact Strength			ISO 179/1eA
--	8.0	kJ/m <sup>2</sup>	
-30°C	7.6	kJ/m <sup>2</sup>	
23°C	8.6	kJ/m <sup>2</sup>	
Charpy Unnotched Impact Strength			ISO 179/1eU
--	66	kJ/m <sup>2</sup>	
-30°C	59	kJ/m <sup>2</sup>	
23°C	68	kJ/m <sup>2</sup>	
Notched Izod Impact			
--	65	J/m	ASTM D256
--	8.5	kJ/m <sup>2</sup>	ISO 180/1A
Thermal	Typical Value	Unit	Test method
Heat Deflection Temperature			ISO 75-2/ Af
1.8 MPa, Unannealed	290	°C	
Melting Temperature	323	°C	ISO 11357-3
CLTE			ISO 11359-2
Flow : -40 to 23°C	1.7E-5	cm/cm/°C	
Flow : 23 to 55°C	5.2E-6	cm/cm/°C	
Transverse : -40 to 23°C	5.6E-5	cm/cm/°C	
Transverse : 23 to 55°C	6.0E-5	cm/cm/°C	
Transverse : 55 to 125°C	1.1E-4	cm/cm/°C	
Heat Deflection Temperature - 0.45 MPa, Unannealed	303	°C	ISO 75-2/A
Electrical	Typical Value	Unit	Test method
Surface Resistivity	5.2E+15	ohms	IEC 60250
Volume Resistivity	> 7.2E+13	ohms·m	IEC 62631-3-1
Dielectric Constant			IEC 60250
100 Hz	3.85		
1 MHz	3.59		
Dissipation Factor			IEC 60250
100 Hz	5.0E-3		
1 MHz	0.013		
Surface Resistance	> 1.0E+14	ohms	IEC 60250
Volume Resistance	> 1.00E+14	ohms	IEC 62631-3-1

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Flammability	Typical Value	Unit	Test method
Flame Rating (0.9 mm)	HB		UL 94
Glow Wire Flammability Index			IEC 60695-2-12
0.9 mm	700	°C	
1.5 mm	675	°C	
Glow Wire Ignition Temperature			IEC 60695-2-13
0.9 mm	725	°C	
1.5 mm	700	°C	
3.2 mm	700	°C	
Oxygen Index	24	%	ISO 4589-2

Injection	Typical Value	Unit
Drying Temperature	121	°C
Drying Time	4.0	hr
Suggested Max Moisture	0.10	%
Hopper Temperature	79	°C
Rear Temperature	313 to 330	°C
Front Temperature	326 to 339	°C
Processing (Melt) Temp	330 to 350	°C
Mold Temperature	150	°C

### Injection Notes

Mold Temperature:

- Higher tool temperatures might be required for thin wall sections

Storage:

- Amodel® 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® processing guide.

### Notes

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

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