Amodel® AS-1933 HS

polyphthalamide

Amodel® AS-1933 HS is a 33% 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).

Potential applications include a variety of automotive components such as thermostat housings, heater core endcaps, heater hose connectors, and water inlets, outlets and valves.

- Black: AS-1933 HS BK 324

General		
Material Status	• Commercial: Active	
Availability	• Africa & Middle East • Asia Pacific • Europe	• Latin America • North America
Filler / Reinforcement	• Glass Fiber, 33% 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	• ASTM D4000 PA121 G35 Color: BK324 Black • ASTM D6779 PA121G35 • BMW GS 93016 Color: BK 324 Black • BOSCH N28 BN05-OX1 BN0510-GF45-3Gsw01SO Color: BK324 Black • CHRYSLER MS-DB-478 CPN4116 Color: Black • FORD WSS-M4D861-A3 Color: BK324 Black • GM GMP.PPA.019 Color: Black • GM GMW16360P-PPA-GF35 Color: BK-324 Black • ISO 1874 PA6T/6I/66, MH, 12-120, GF33 Color: BK324 Black • PSA Peugeot-Citroën SPA X62 4203 • VALEO PDT NVB 10 057 Color: BK324 Black	
Appearance	• Black	
Forms	• Pellets	
Processing Method	• Injection Molding	

Physical	Typical Value	Unit	Test method
Density	1.45	g/cm³	ISO 1183/A
Molding Shrinkage			ASTM D955
Flow	2.0E-3	in/in	
Across Flow	6.0E-3	in/in	
Water Absorption (24 hr)	0.21	%	ASTM D570

Mechanical	Typical Value	Unit	Test method
Tensile Modulus			
--	1.70E+6	psi	ASTM D638
-- [1]	1.10E+6	psi	ASTM D638
--	1.83E+6	psi	ISO 527-1

Mechanical	Typical Value	Unit	Test method
Tensile Strength			
Break	32000	psi	ASTM D638
Break [1]	11000	psi	ASTM D638
Break	30700	psi	ISO 527-2
Tensile Elongation (Break)	2.5	%	ASTM D638 ISO 527-2
Flexural Modulus			
--	1.56E+6	psi	ASTM D790
--	1.54E+6	psi	ISO 178
Flexural Stress			
--	44800	psi	ISO 178
Yield	45400	psi	ASTM D790

Impact	Typical Value	Unit	Test method
Charpy Notched Impact Strength	4.8	ft·lb/in²	ISO 179/1eA
Charpy Unnotched Impact Strength	36	ft·lb/in²	ISO 179/1eU
Notched Izod Impact			
--	1.7	ft·lb/in	ASTM D256
-- [1]	1.0	ft·lb/in	ASTM D256
--	4.5	ft·lb/in²	ISO 180/1A

Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load			
264 psi, Unannealed	530	°F	ASTM D648
264 psi, Unannealed	532	°F	ISO 75-2/Af
Melting Temperature	594	°F	ISO 11357-3

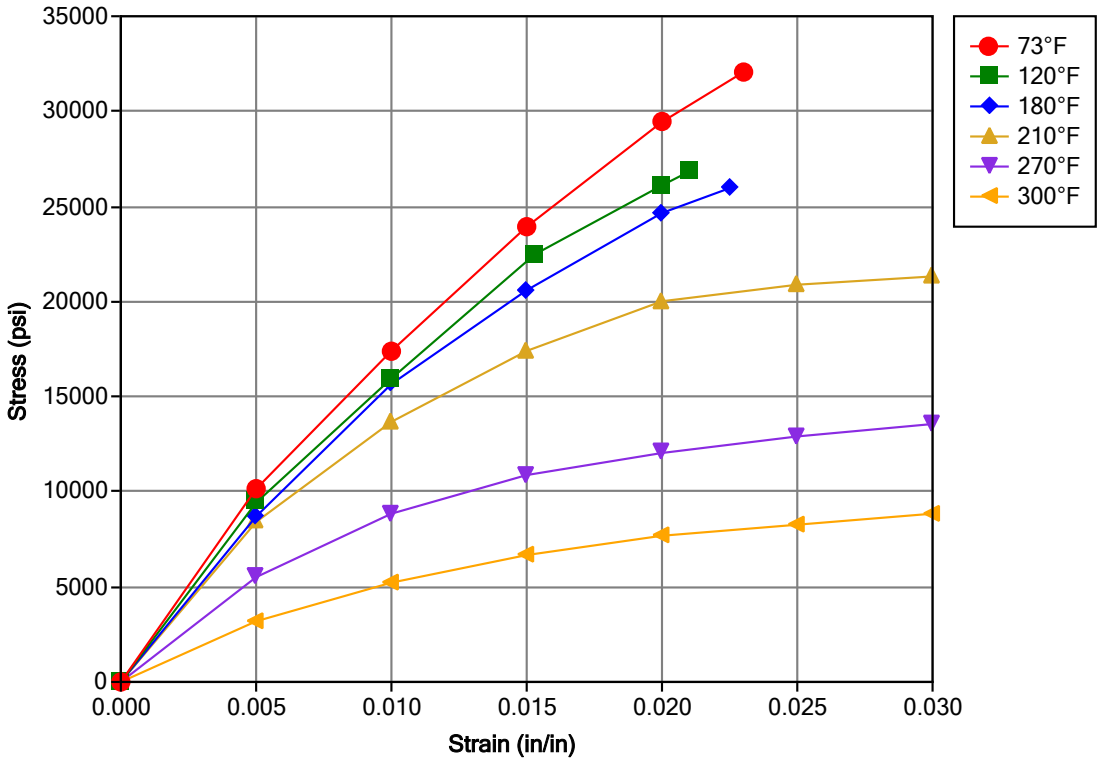
Injection	Typical Value	Unit
Drying Temperature	250	°F
Drying Time	4.0	hr
Suggested Max Moisture	0.030 to 0.060	%
Hopper Temperature	175	°F
Rear Temperature	580 to 605	°F
Front Temperature	600 to 625	°F
Processing (Melt) Temp	610 to 650	°F
Mold Temperature	275	°F

Injection Notes

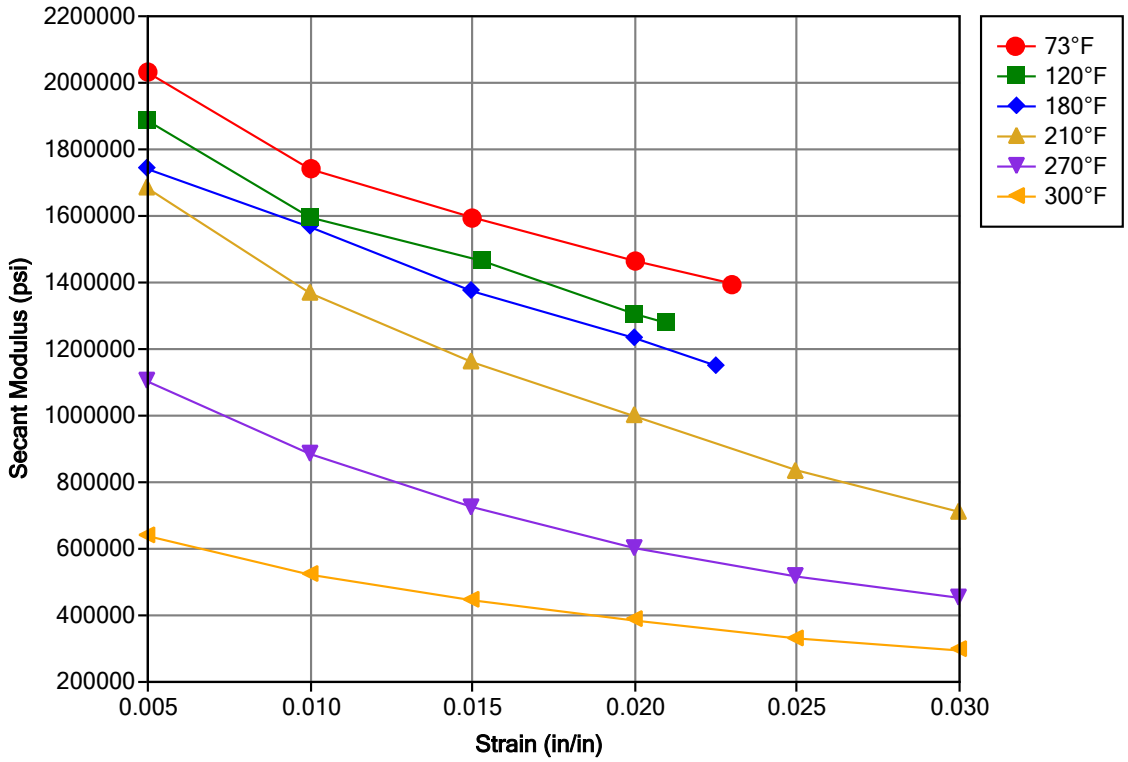
Storage:

- 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.

Isothermal Stress vs. Strain (ISO 11403)



Secant Modulus vs. Strain (ISO 11403)



Notes

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

[1] After Immersion in 50/50 Glycol/Water Mixture for 1,000 hours at 275°F (135°C)

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