Amodel® A-4160 HSL
polyphthalamide

Amodel® A-4160 HSL resin is a 60% glass reinforced, heat stabilized polyphthalamide (PPA) which exhibits high modulus at elevated temperatures, a high heat deflection temperature and exceptional creep resistance. This material was designed for metal replacement applications. Its rapid crystallization and good flow characteristics allow shorter cycles for enhanced molding productivity.

- Black: A-4160 HSL BK324

General		
Material Status	• Commercial: Active	
Availability	• Africa & Middle East • Asia Pacific • Europe	• Latin America • North America
Filler / Reinforcement	• Glass Fiber, 60% Filler by Weight	
Additive	• Heat Stabilizer • Lubricant	• Mold Release
Features	• Chemical Resistant • Creep Resistant • Fast Molding Cycle • Good Dimensional Stability • Good Toughness • Heat Stabilized	• High Heat Resistance • High Strength • Hot Water Moldability • Low CLTE • Lubricated • Ultra High Stiffness
Uses	• Automotive Applications • Automotive Electronics • Automotive Under the Hood • Camera Applications • Cell Phones • Connectors	• Electrical/Electronic Applications • Housings • Industrial Applications • Machine/Mechanical Parts • Metal Replacement • Transmission Applications
RoHS Compliance	• RoHS Compliant	
Automotive Specifications	• ASTM D6779 PA102G60	
Appearance	• Black	
Forms	• Pellets	
Processing Method	• Water-Heated Mold Injection Molding	

Physical	Typical Value	Unit	Test method
Density	1.75	g/cm³	ISO 1183/A
Molding Shrinkage			ISO 294-4
Across Flow	0.80	%	
Flow	0.50	%	
Water Absorption (24 hr, 23°C)	0.19	%	ISO 62

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Mechanical	Typical Value	Unit	Test method
Tensile Modulus			ISO 527-1
23°C	23300	MPa	
200°C	8770	MPa	
Tensile Stress			ISO 527-2
Break, 23°C	244	MPa	
Break, 200°C	79.6	MPa	
Tensile Strain			ISO 527-2
Break, 23°C	1.4	%	
Break, 200°C	3.3	%	
Flexural Modulus			ISO 178
23°C	19300	MPa	
200°C	8500	MPa	
Flexural Stress			ISO 178
23°C	385	MPa	
200°C	137	MPa	

Impact	Typical Value	Unit	Test method
Charpy Notched Impact Strength (23°C)	13	kJ/m²	ISO 179/1eA
Charpy Unnotched Impact Strength (23°C)	130	kJ/m²	ISO 179/1eU

Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load			ISO 75-2/A
1.8 MPa, Unannealed	304	°C	

Injection	Typical Value	Unit
Drying Temperature	120	°C
Drying Time	4.0	hr
Rear Temperature	318 to 324	°C
Front Temperature	327 to 332	°C
Processing (Melt) Temp	329 to 343	°C
Mold Temperature	66 to 140	°C

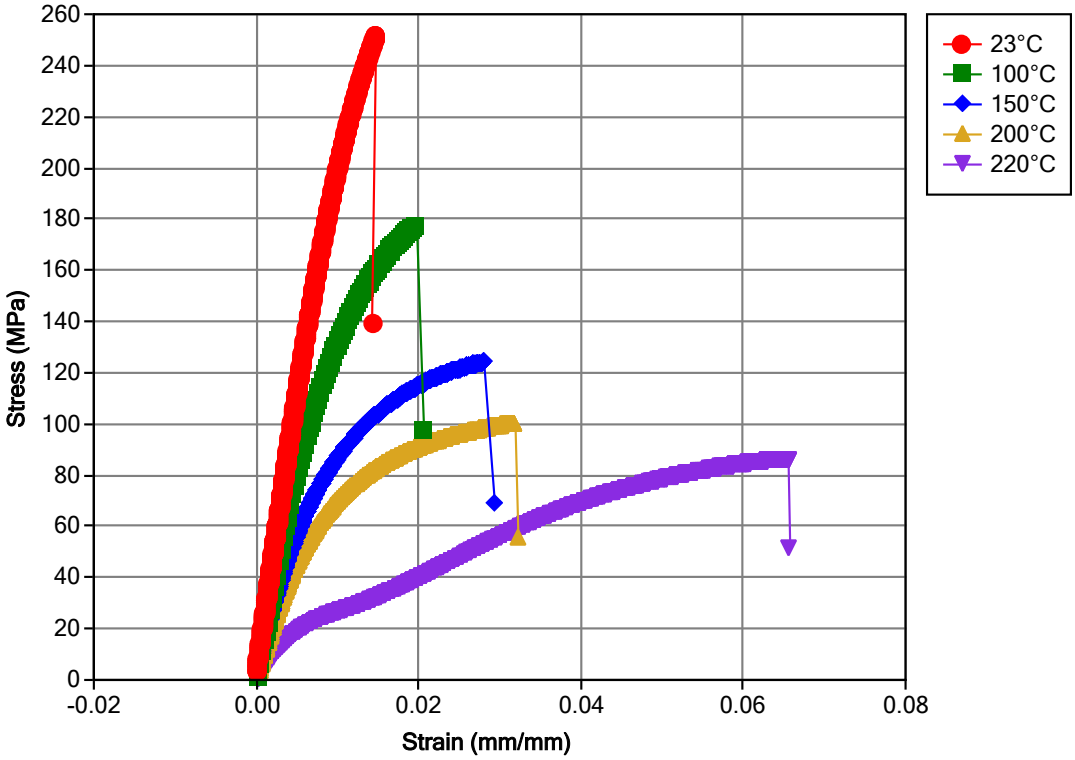
Injection Notes

Injection Pressure: 3 to 4 in/sec

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)



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

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