

Amodel® AS-1945 HS

polyphthalamide

Amodel® AS-1945 HS is a 45% 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-1945 HS BK 324

General

| | |
|---------------------------|---|
| Material Status | <ul style="list-style-type: none"> • Commercial: Active |
| Availability | <ul style="list-style-type: none"> • Africa & Middle East • Asia Pacific • Europe • Latin America • North America |
| Filler / Reinforcement | <ul style="list-style-type: none"> • Glass Fiber, 45% Filler by Weight |
| Additive | <ul style="list-style-type: none"> • Heat Stabilizer |
| Features | <ul style="list-style-type: none"> • Antifreeze Resistant • Chemical Resistant • Creep Resistant • Good Dimensional Stability • Good Glycol Resistance • Good Stiffness • Heat Stabilized • High Heat Resistance • High Strength |
| Uses | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • RoHS Compliant |
| Automotive Specifications | <ul style="list-style-type: none"> • ASTM D6779 PA121G45 • CHRYSLER MS-DB-478 CPN 5101 Color: BK 324 Black¹ • FORD WSS-M4D997-A Color: BK-324 Black • GM GMP.PPA.018 Color: BK-324 Black • GM GMW16360P-PPA-GF45 Color: BK-324 Black • IMDS ID 14880200 Color: BK-324 Black |
| Appearance | <ul style="list-style-type: none"> • Black |
| Forms | <ul style="list-style-type: none"> • Pellets |
| Processing Method | <ul style="list-style-type: none"> • Injection Molding |

| Physical | Typical Value | Unit | Test method |
|--------------------------|---------------|-------------------|-------------|
| Density | 1.57 | g/cm ³ | ISO 1183/A |
| Molding Shrinkage | | | |
| Flow ² | 0.20 | % | ASTM D955 |
| Across Flow ² | 0.60 | % | ASTM D955 |
| Across Flow | 0.60 | % | ISO 294-4 |
| Flow | 0.20 | % | ISO 294-4 |

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| Mechanical | Typical Value | Unit | Test method |
|-----------------------------------|---------------|-------------------|--------------|
| Tensile Modulus | | | |
| -- | 15200 | MPa | ASTM D638 |
| -- ³ | 10300 | MPa | ASTM D638 |
| -- | 15100 | MPa | ISO 527-2 |
| Tensile Strength | | | |
| Break | 252 | MPa | ASTM D638 |
| Break ³ | 107 | MPa | ASTM D638 |
| Break | 244 | MPa | ISO 527-2 |
| Tensile Elongation (Break) | 2.5 | % | ASTM D638 |
| Flexural Modulus | | | |
| -- | 13800 | MPa | ASTM D790 |
| -- | 12600 | MPa | ISO 178 |
| Flexural Stress | | | |
| -- | 335 | MPa | ISO 178 |
| Yield | 359 | MPa | ASTM D790 |
| Impact | Typical Value | Unit | Test method |
| Charpy Notched Impact Strength | 13 | kJ/m ² | ISO 179/1eA |
| Notched Izod Impact | | | |
| -- | 120 | J/m | ASTM D256 |
| -- ³ | 69 | J/m | ASTM D256 |
| -- | 11 | kJ/m ² | ISO 180/1A |
| Thermal | Typical Value | Unit | Test method |
| Deflection Temperature Under Load | | | ASTM D648 |
| 1.8 MPa, Unannealed | 282 | °C | ISO 75-2/ Af |
| Melting Temperature | 312 | °C | ISO 11357-3 |

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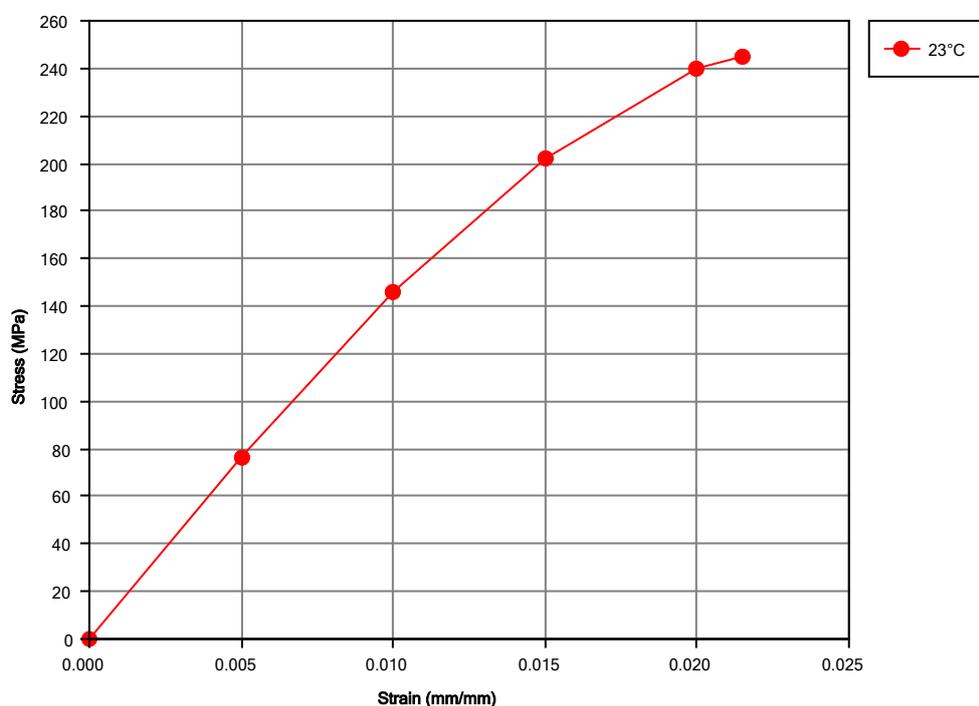
| Injection | Typical Value | Unit |
|------------------------|----------------|------|
| Drying Temperature | 121 | °C |
| Drying Time | 4.0 | hr |
| Suggested Max Moisture | 0.030 to 0.060 | % |
| Hopper Temperature | 79 | °C |
| Rear Temperature | 304 to 318 | °C |
| Front Temperature | 316 to 329 | °C |
| Processing (Melt) Temp | 321 to 343 | °C |
| Mold Temperature | 135 | °C |

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.

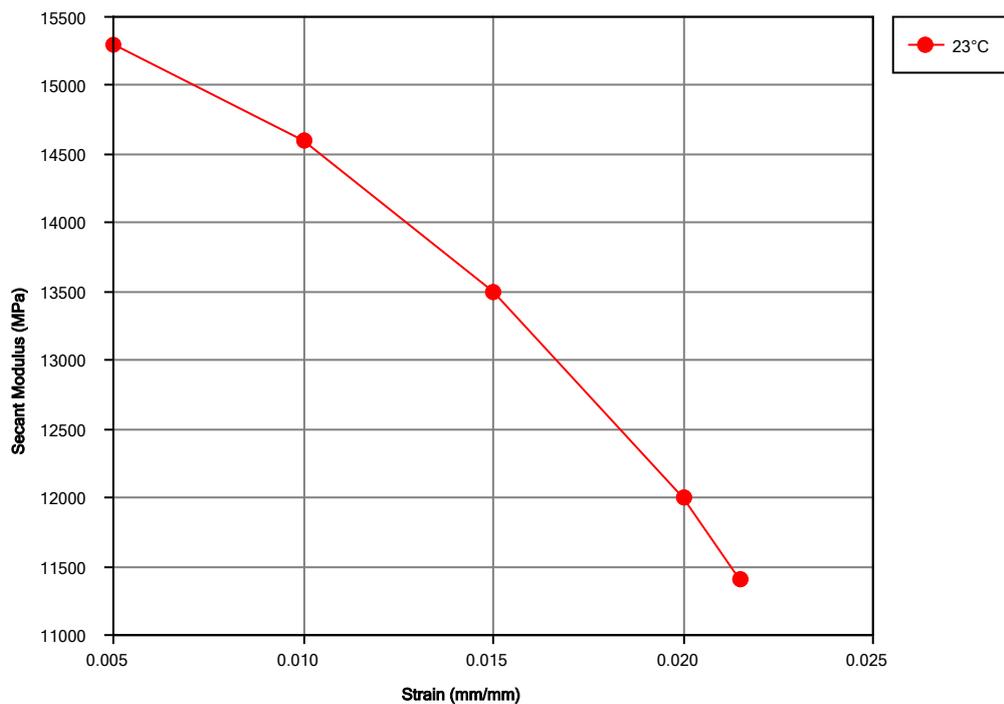
Isothermal Stress vs. Strain (ISO 11403-1)



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Secant Modulus vs. Strain (ISO 11403-1)



Notes

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

¹ CPN 5101

² Type D2

³ After Immersion in 50/50 Glycol/Water Mixture for 1,000 hours at 275°F (135°C)

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