# Amodel® A-1565 HS

## polyphthalamide

Amodel® A-1565 HS is a 65% glass and mineral-reinforced polyphthalamide (PPA) designed to be cost-effective in applications requiring high stiffness, good dimensional stability and good retention of stiffness at elevated temperatures. This grades also exhibits a high deflection temperature and flexural modulus.

- Black: A-1565 HS BK 324

### General

| | | |
|---|---|---|
| Material Status | • Commercial: Active | |
| Availability | • Africa & Middle East<br>• Asia Pacific<br>• Europe | • Latin America<br>• North America |
| Filler / Reinforcement | • Glass\Mineral, 65% Filler by Weight | |
| Additive | • Heat Stabilizer | |
| Features | • Chemical Resistant<br>• Creep Resistant<br>• Good Dimensional Stability<br>• High Heat Resistance | • Low CLTE<br>• Low Warpage<br>• Lubricated<br>• Ultra High Stiffness |
| Uses | • Automotive Applications<br>• Automotive Under the Hood<br>• Housings | • Industrial Applications<br>• Industrial Parts<br>• Pump Parts |
| RoHS Compliance | • RoHS Compliant | |
| Automotive Specifications | • ASTM D4000 PA121 R65 Color: BK324 Black<br>• ASTM D6779 PA121R65 | • DELPHI M-53294 Color: BK324 Black |
| Appearance | • Black | |
| Forms | • Pellets | |
| Processing Method | • Injection Molding | |

| Physical | Dry | Conditioned | Unit | Test method |
|---|---|---|---|---|
| Density | 1.90 | -- | g/cm³ | ISO 1183/A |
| Molding Shrinkage | | | | ASTM D955 |
| Flow | 0.30 | -- | % | |
| Across Flow | 0.50 | -- | % | |
| Water Absorption (24 hr) | 0.10 | -- | % | ASTM D570 |

| Mechanical | Dry | Conditioned | Unit | Test method |
|---|---|---|---|---|
| Tensile Modulus | | | | |
| -- | 20700 | 20800 | MPa | ASTM D638 |
| 23°C | 19700 | -- | MPa | ISO 527-2 |
| 100°C | 15400 | -- | MPa | ISO 527-2 |
| 150°C | 5720 | -- | MPa | ISO 527-2 |
| 175°C | 5100 | -- | MPa | ISO 527-2 |

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| Mechanical | Dry | Conditioned | Unit | Test method |
|---|---|---|---|---|
| Tensile Stress | | | | |
| Break, 23°C | 138 | -- | MPa | ISO 527-2 |
| Break, 100°C | 91.7 | -- | MPa | ISO 527-2 |
| Break, 150°C | 46.2 | -- | MPa | ISO 527-2 |
| Break, 175°C | 32.4 | -- | MPa | ISO 527-2 |
| -- | 131 | 123 | MPa | ASTM D638 |
| Tensile Elongation | | | | |
| Break | 1.2 | 1.2 | % | ASTM D638 |
| Break, 23°C | 1.0 | -- | % | ISO 527-2 |
| Break, 100°C | 1.3 | -- | % | ISO 527-2 |
| Break, 150°C | 2.4 | -- | % | ISO 527-2 |
| Break, 175°C | 1.8 | -- | % | ISO 527-2 |
| Flexural Modulus | | | | |
| -- | 17900 | 18000 | MPa | ASTM D790 |
| 23°C | 9100 | -- | MPa | ISO 178 |
| 100°C | 6830 | -- | MPa | ISO 178 |
| 150°C | 2480 | -- | MPa | ISO 178 |
| 175°C | 2280 | -- | MPa | ISO 178 |
| Flexural Strength | | | | |
| -- | 210 | 196 | MPa | ASTM D790 |
| 23°C | 211 | -- | MPa | ISO 178 |
| 100°C | 163 | -- | MPa | ISO 178 |
| 150°C | 69.6 | -- | MPa | ISO 178 |
| 175°C | 55.8 | -- | MPa | ISO 178 |
| Compressive Strength (13.0 mm) | 189 | -- | MPa | ASTM D695 |
| Shear Strength | 71.0 | 49.6 | MPa | ASTM D732 |

| Impact | Dry | Conditioned | Unit | Test method |
|---|---|---|---|---|
| Charpy Notched Impact Strength (23°C) | 3.4 | -- | kJ/m² | ISO 179/1eA |
| Charpy Unnotched Impact Strength (23°C) | 44 | -- | kJ/m² | ISO 179/1eU |
| Notched Izod Impact | | | | |
| -- | 37 | 32 | J/m | ASTM D256 |
| 23°C | 4.0 | -- | kJ/m² | ISO 180/1A |
| Unnotched Izod Impact | | | | |
| -- | 410 | -- | J/m | ASTM D256 |
| 23°C | 32 | -- | kJ/m² | ISO 180/1U |

| Thermal | Dry | Conditioned | Unit | Test method |
|---|---|---|---|---|
| Deflection Temperature Under Load | | | | ASTM D648 |
| 1.8 MPa, Unannealed | 271 | -- | °C | ISO 75-2/A |
| Melting Temperature | 311 | -- | °C | ISO 11357-3<br>ASTM D3418 |
| CLTE | | | | ASTM E831 |
| Flow : 0 to 100°C | 2.0E-5 | -- | cm/cm/°C | |
| Flow : 100 to 200°C | 1.7E-5 | -- | cm/cm/°C | |
| Transverse : 0 to 100°C | 3.7E-5 | -- | cm/cm/°C | |
| Transverse : 100 to 200°C | 8.1E-5 | -- | cm/cm/°C | |

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| Electrical | Dry | Conditioned | Unit | Test method |
|---|---|---|---|---|
| Volume Resistivity | 4.0E+14 | -- | ohms·cm | ASTM D257 |
| Arc Resistance | 125 | -- | sec | ASTM D495 |
| Comparative Tracking Index (CTI) | 600 | -- | V | UL 746 |

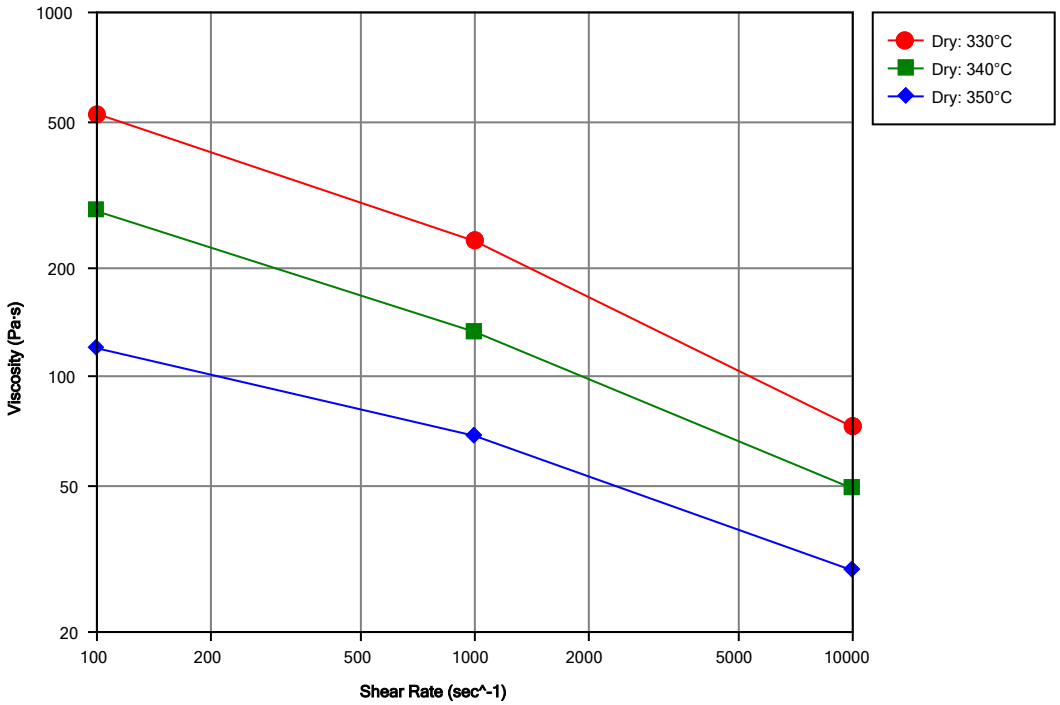
| Injection | Dry | Unit |
|---|---|---|
| Drying Temperature | 120 | °C |
| Drying Time | 4.0 | hr |
| Suggested Max Moisture | 0.045 | % |
| Hopper Temperature | 79 | °C |
| Rear Temperature | 304 to 318 | °C |
| Front Temperature | 316 to 329 | °C |
| Processing (Melt) Temp | 321 to 343 | °C |
| Mold 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.

## Viscosity vs. Shear Rate (ISO 11403-2)



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**Notes**

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


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