

Amodel® A-1145 HS

polyphthalamide

Amodel A-1145 HS is a 45% glass reinforced, heat stabilized polyphthalamide (PPA) with a high heat deflection temperature, very high flexural modulus and very high tensile strength. Excellent creep resistance and low moisture absorption are also characteristic of this resin.

- Black: A-1145 HS BK 324
- Natural: A-1145 HS NT

General

| | | | |
|---------------------------|--|---|--|
| Material Status | • Commercial: Active | | |
| Availability | • Africa & Middle East • Asia Pacific | • Europe • North America | • South America |
| Filler / Reinforcement | • Glass Fiber Reinforcement, 45% Filler by Weight | | |
| Additive | • Heat Stabilizer | | |
| Features | • Good Chemical Resistance • Good Creep Resistance • Good Dimensional Stability | • Good Stiffness • High Heat Resistance • High Strength | • High Temperature Strength • Low Moisture Absorption |
| Uses | • Automotive Applications • Automotive Electronics • Automotive Under the Hood • Connectors | • Housings • Industrial Applications • Industrial Parts • Machine/Mechanical Parts | • Metal Replacement • Power/Other Tools • Valves/Valve Parts |
| RoHS Compliance | • RoHS Compliant | | |
| Automotive Specifications | <ul style="list-style-type: none"> • 3M 11-0003-5762-1 Color: BK324 Black • ASTM D4000 PA121 G45 Color: BK324 Black • ASTM D4000 PA121 G45 Color: NT Natural • ASTM D4000 PPA0120 G46 A95726 AA002 CD295 GB159 MF015Z Color: BN575 Brown • ASTM D6779 PA121G45 • BOSCH 9 916 365 011 Color: BK 324, NT Black & Natural • CHRYSLER MS-DB478 Type B CPN3567 Color: Black • FORD WSB-M4D861-A Color: BK324 Black • FORD WSB-M4D861-A Color: NT Natural • GM GMP.PPA.008 Color: BK324 Black • GM GMP.PPA.008 Color: NT Natural • GM GMW16356 GMW16356P-PPA-GF45 Color: BK-324 & NT Black & Natural • ISO 1874 PA6T/6I/66, MH, 12-160, GF45 Color: NT Natural • TRW S-13301201 Color: BK324 Black | | |
| Appearance | • Black | • Natural Color | |
| Forms | • Pellets | | |
| Processing Method | • Injection Molding | | |

| Physical | Dry | Conditioned Unit | Test Method |
|--------------------------|------|----------------------|-------------|
| Density | 1.59 | -- g/cm ³ | ISO 1183/A |
| Molding Shrinkage | | | ASTM D955 |
| Flow | 0.20 | 0.10 % | |
| Across Flow | 0.60 | 0.10 % | |
| Water Absorption (24 hr) | 0.12 | -- % | ASTM D570 |

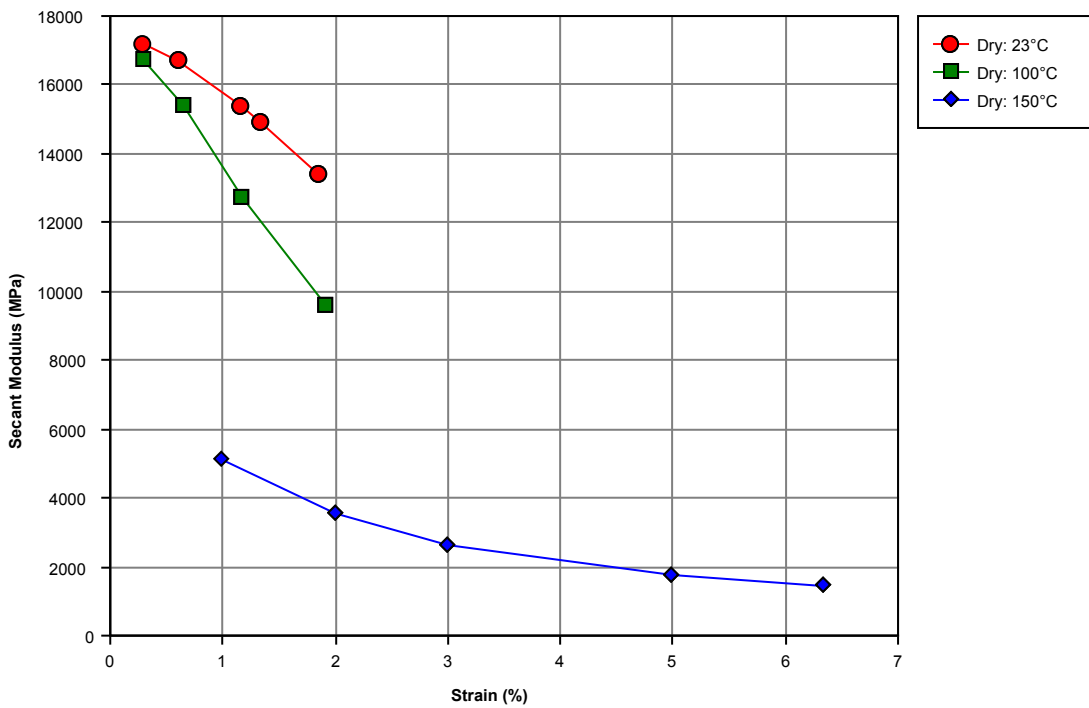
| Mechanical | Dry | Conditioned | Unit | Test Method |
|--|-------|-------------|-------------------|-------------|
| Tensile Modulus | | | | |
| -- | 17200 | 17200 | MPa | ASTM D638 |
| 23°C | 16800 | -- | MPa | ISO 527-2 |
| 100°C | 11200 | -- | MPa | ISO 527-2 |
| 150°C | 8000 | -- | MPa | ISO 527-2 |
| 175°C | 5380 | -- | MPa | ISO 527-2 |
| Tensile Stress | | | | |
| Break, 23°C | 263 | -- | MPa | ISO 527-2 |
| Break, 100°C | 173 | -- | MPa | ISO 527-2 |
| Break, 150°C | 84.8 | -- | MPa | ISO 527-2 |
| Break, 175°C | 75.8 | -- | MPa | ISO 527-2 |
| -- | 259 | 228 | MPa | ASTM D638 |
| Tensile Elongation | | | | |
| Break | 2.6 | 2.1 | % | ASTM D638 |
| Break, 23°C | 2.7 | -- | % | ISO 527-2 |
| Break, 100°C | 2.5 | -- | % | ISO 527-2 |
| Break, 150°C | 7.2 | -- | % | ISO 527-2 |
| Break, 175°C | 6.5 | -- | % | ISO 527-2 |
| Flexural Modulus | | | | |
| -- | 13800 | 13800 | MPa | ASTM D790 |
| 23°C | 15900 | -- | MPa | ISO 178 |
| 100°C | 13000 | -- | MPa | ISO 178 |
| 150°C | 5380 | -- | MPa | ISO 178 |
| 175°C | 4900 | -- | MPa | ISO 178 |
| Flexural Strength | | | | |
| -- | 363 | 294 | MPa | ASTM D790 |
| 23°C | 377 | -- | MPa | ISO 178 |
| 100°C | 267 | -- | MPa | ISO 178 |
| 150°C | 111 | -- | MPa | ISO 178 |
| 175°C | 94.5 | -- | MPa | ISO 178 |
| Compressive Strength (25.4 mm) | 194 | -- | MPa | ASTM D695 |
| Shear Strength | 108 | 91.7 | MPa | ASTM D732 |
| Poisson's Ratio | 0.41 | -- | | ASTM E132 |
| Impact | | | | |
| Charpy Notched Impact Strength (23°C) | | | | |
| | 10 | -- | kJ/m ² | ISO 179/1eA |
| Charpy Unnotched Impact Strength (23°C) | | | | |
| | 92 | -- | kJ/m ² | ISO 179/1eU |
| Notched Izod Impact | | | | |
| -- | 110 | 100 | J/m | ASTM D256 |
| 23°C | 10 | -- | kJ/m ² | ISO 180/1A |
| Unnotched Izod Impact | | | | |
| -- | 1100 | -- | J/m | ASTM D256 |
| 23°C | 61 | -- | kJ/m ² | ISO 180/1U |
| Hardness | | | | |
| Rockwell Hardness (R-Scale) | | | | |
| | 125 | -- | | ASTM D785 |

| Thermal | Dry | Conditioned Unit | Test Method |
|-------------------------------------|---------------|------------------|---------------------------|
| Deflection Temperature Under Load | | | |
| 0.45 MPa, Annealed, 3.20 mm | 301 | -- °C | ASTM D648 |
| 1.8 MPa, Unannealed | 281 | -- °C | ISO 75-2/A |
| 1.8 MPa, Annealed, 3.20 mm | 287 | -- °C | ASTM D648 |
| Max. Continuous Use Temperature | | | ASTM D3045 |
| -- ¹ | 165 | -- °C | |
| -- ² | 185 | -- °C | |
| Melting Temperature | 310 | -- °C | ISO 11357-3 ASTM D3418 |
| CLTE | | | ASTM E831 |
| Flow: 0 to 100°C | 0.000014 | -- cm/cm/°C | |
| Flow: 100 to 200°C | 0.000035 | -- cm/cm/°C | |
| Transverse: 0 to 100°C | 0.000050 | -- cm/cm/°C | |
| Transverse: 100 to 200°C | 0.00015 | -- cm/cm/°C | |
| Electrical | Dry | Conditioned Unit | Test Method |
| Volume Resistivity | 1.0E+16 | 2.0E+15 ohm·cm | ASTM D257 |
| Dielectric Strength (3.20 mm) | 23 | 23 kV/mm | ASTM D149 |
| Dielectric Constant | | | ASTM D150 |
| 60 Hz | 4.60 | 4.90 | |
| 1 MHz | 4.40 | 4.50 | |
| Dissipation Factor | | | ASTM D150 |
| 60 Hz | 0.0050 | 0.0090 | |
| 1 MHz | 0.016 | 0.021 | |
| Arc Resistance | 145 | 125 sec | ASTM D495 |
| Comparative Tracking Index (CTI) | 550 | 550 V | UL 746 |
| Flammability | Dry | Conditioned Unit | Test Method |
| Flame Rating ³ (3.20 mm) | HB | -- | UL 94 |
| Injection | Dry Unit | | |
| Drying Temperature | 120 °C | | |
| Drying Time | 4.5 hr | | |
| Suggested Max Moisture | 0.045 % | | |
| Rear Temperature | 304 to 318 °C | | |
| Front Temperature | 316 to 329 °C | | |
| Processing (Melt) Temp | 321 to 343 °C | | |
| Mold Temperature | 135 °C | | |

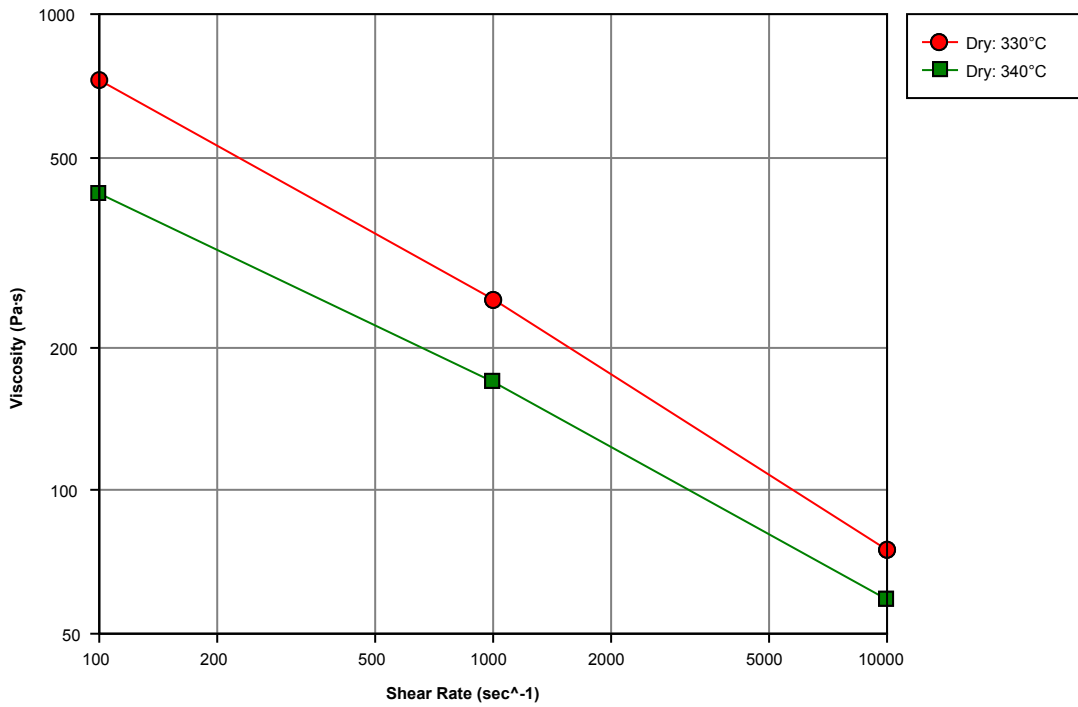
Isothermal Stress vs. Strain (ISO 11403-1)



Secant Modulus vs. Strain (ISO 11403-1)



Viscosity vs. Shear Rate (ISO 11403-2)



Notes

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

¹ 20000 hr

² 5000 hr

³ These flammability ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions.

www.SolvaySpecialtyPolymers.com

Contact Solvay Specialty Polymers

Europe, Middle East and Africa SpecialtyPolymers.EMEA@solvay.com

Americas SpecialtyPolymers.Americas@solvay.com

Asia and Australia SpecialtyPolymers.Asia@solvay.com

In Case of Accident

Europe & South America +44(0).1235.239.670 (CareChem 24)

North America +1.703.527.3887 (Chemtrec)
+1.800.424.9300 (Toll Free Chemtrec)

China & Taiwan +86.10.5100.3039 (CareChem 24)

East/South East Asia +65.3158.1074 (CareChem 24)

Product Information, Technical Assistance and MSDS

Europe +39.02.3835.1

Americas +1.770.772.8760
+1.800.621.4557

Japan +81.3.5425.4300

China & South East Asia +86.21.5080.5080

Material Safety Data Sheets (MSDS) are available by emailing us or contacting your sales representative. Always consult the appropriate MSDS before using any of our products.

Neither Solvay Specialty Polymers nor any of its affiliates makes any warranty, express or implied, including merchantability or fitness for use, or accepts any liability in connection with this product, related information or its use. Some applications of which Solvay's products may be proposed to be used are regulated or restricted by applicable laws and regulations or by national or international standards and in some cases by Solvay's recommendation, including applications of food/feed, water treatment, medical, pharmaceuticals, and personal care. Only products designated as part of the Solviva® family of biomaterials may be considered as candidates for use in implantable medical devices. The user alone must finally determine suitability of any information or products for any contemplated use in compliance with applicable law, the manner of use and whether any patents are infringed. The information and the products are for use by technically skilled persons at their own discretion and risk and does not relate to the use of this product in combination with any other substance or any other process. This is not a license under any patent or other proprietary right.

All trademarks and registered trademarks are property of the companies that comprise the Solvay Group or their respective owners.
© 2012 Solvay Specialty Polymers. All rights reserved.

