Amodel® AT-1116 HS
polyphthalamide

Amodel® AT-1116 HS polyphthalamide (PPA) is a toughened, heat stabilized 16% glass reinforced resin, designed as a cost effective solution for applications requiring stiffness, good dimensional stability, chemical resistance and ductility. This resin has a high heat deflection temperature and a high flexural modulus, with greater tensile elongation than untoughened glass reinforced PPA.

Typical applications include bearings, bearing retainers/cages, housings, chemical processing equipment components, motor frames, sporting equipment, lawn and garden equipment and components that require press-fit or snap-fit assembly.

- Black: AT-1116 HS BK 324
- Natural: AT-1116 HS NT

General

Material Status	• Commercial: Active	
Availability	• Africa & Middle East • Asia Pacific • Europe	• Latin America • North America
Filler / Reinforcement	• Glass Fiber, 16% Filler by Weight	
Additive	• Heat Stabilizer	• Impact Modifier
Features	• Chemical Resistant • Good Dimensional Stability • Heat Stabilized	• High Heat Resistance • Impact Modified
Uses	• Automotive Applications • Automotive Electronics • Automotive Under the Hood • Bearings • Bobbins/Spools • Connectors	• General Purpose • Industrial Applications • Industrial Parts • Machine/Mechanical Parts • Metal Replacement
RoHS Compliance	• RoHS Compliant	

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General

Automotive Specifications	• ASTM D4000 PPA0111 G17 KD124 KN055 PN046 YI238 LD002 Color: BK 324 Black • ASTM D4000 PPA0111 G17 KD124 KN055 PN046 YI238 LD002 Color: NT Natural • ASTM D6779 PA123G15 YI220 • GM GMN6828 Color: BK 324 Black • GM GMN6828 Color: NT Natural • GM GMP.PPA.009 Color: BK 324 Black • GM GMP.PPA.009 Color: NT Natural • GM GMW15702-021991 Color: BK 324 Black • GM GMW15702-021991 Color: NT Natural • GM GMW16359P-PPA-GF15 Color: BK 324 Black • GM GMW16359P-PPA-GF15 Color: NT Natural • ISO 1874-PA 6T/6I/66-HI, MH, 12-060, GF16 • YAZAKI YPES-25-02-305 Color: BK 324 Black • YAZAKI YPES-25-02-305 Color: NT Natural
Appearance	• Black • Natural Color
Forms	• Pellets
Processing Method	• Injection Molding

Physical	Dry	Conditioned	Unit	Test method
Density	1.28	--	g/cm³	ISO 1183/A
Molding Shrinkage				ASTM D955
Flow	0.60	--	%	
Across Flow	0.60	--	%	
Water Absorption (24 hr)	0.20	--	%	ASTM D570

Mechanical	Dry	Conditioned	Unit	Test method
Tensile Modulus				
--	6480	7100	MPa	ASTM D638
23°C	6890	--	MPa	ISO 527-1
100°C	6690	--	MPa	ISO 527-1
Tensile Stress				
Break, 23°C	160	--	MPa	ISO 527-2
Break, 100°C	65.5	--	MPa	ISO 527-2
--	161	131	MPa	ASTM D638
Tensile Elongation				
Break	3.8	2.8	%	ASTM D638
Break, 23°C	3.7	--	%	ISO 527-2
Break, 100°C	4.2	--	%	ISO 527-2
Flexural Modulus				
--	6000	6210	MPa	ASTM D790
23°C	6690	--	MPa	ISO 178
100°C	4960	--	MPa	ISO 178

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Mechanical	Dry	Conditioned	Unit	Test method
Flexural Strength				
--	226	201	MPa	ASTM D790
23°C	197	--	MPa	ISO 178
100°C	141	--	MPa	ISO 178
Compressive Strength	124	--	MPa	ASTM D695
Shear Strength	69.6	65.5	MPa	ASTM D732

Impact	Dry	Conditioned	Unit	Test method
Charpy Notched Impact Strength (23°C)	9.0	--	kJ/m²	ISO 179/1eA
Charpy Unnotched Impact Strength (23°C)	86	--	kJ/m²	ISO 179/1eU
Notched Izod Impact				
--	96	48	J/m	ASTM D256
23°C	8.0	--	kJ/m²	ISO 180/1A
Unnotched Izod Impact				
--	960	800	J/m	ASTM D4812
23°C	53	--	kJ/m²	ISO 180/1U
Instrumented Dart Impact				ASTM D3763
Energy at Maxumum Load [1]	1.76	--	J	
Energy at Maxumum Load [2]	--	1.36	J	
Total Energy	10.0	7.59	J	

Thermal	Dry	Conditioned	Unit	Test method
Deflection Temperature Under Load				
0.45 MPa, Annealed	268	--	°C	ASTM D648
1.8 MPa, Unannealed	258	--	°C	ISO 75-2/A
1.8 MPa, Annealed	254	--	°C	ASTM D648
Peak Melting Temperature	310	--	°C	ASTM D3418
CLTE				ASTM E831
Flow : 0 to 100°C	2.2E-5	--	cm/cm/°C	
Flow : 100 to 200°C	1.6E-5	--	cm/cm/°C	
Transverse : 0 to 100°C	7.5E-5	--	cm/cm/°C	
Transverse : 100 to 200°C	1.2E-4	--	cm/cm/°C	

Electrical	Dry	Conditioned	Unit	Test method
Comparative Tracking Index	> 600	--	V	IEC 60112

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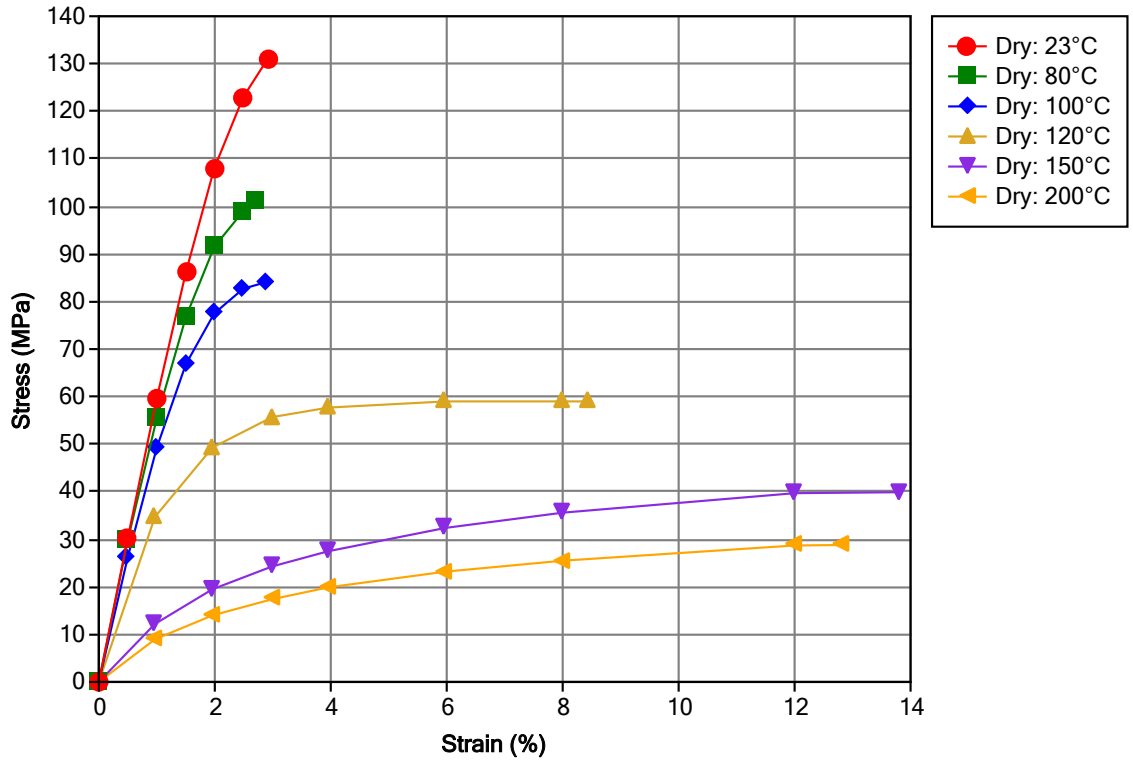
Injection	Dry	Unit
Drying Temperature	110	°C
Drying Time	4.0	hr
Suggested Max Moisture	0.030 to 0.060	%
Rear Temperature	304 to 318	°C
Front Temperature	316 to 329	°C
Processing (Melt) Temp	321 to 343	°C
Mold Temperature	135	°C

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)



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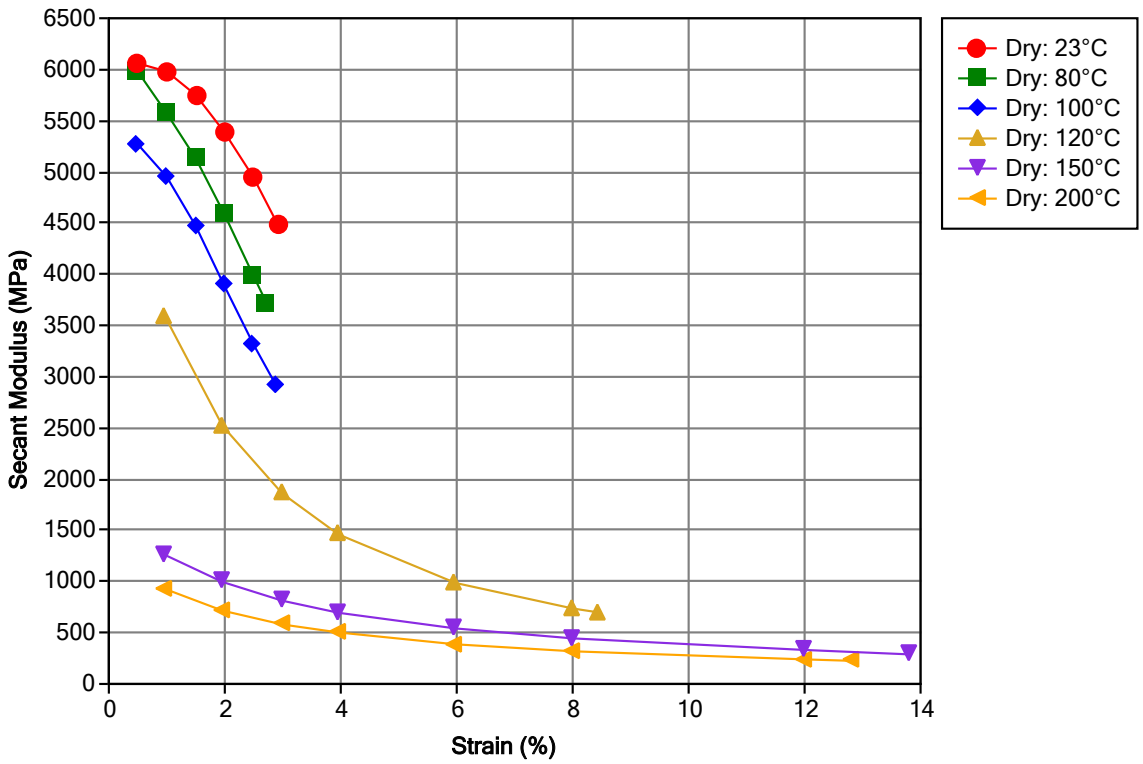
Secant Modulus vs. Strain (ISO 11403)



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Notes
Typical properties: these are not to be construed as specifications.
[1] Maximum Load: 240 lb (1070 N)
[2] Maximum Load: 200 lb (890 N)