Amodel® AS-1133 HS

polyphthalamide

Amodel AS-1133 HS is a 33% glass reinforced, heat stabilized polyphthalamide (PPA) resin that provides excellent structural integrity in molded parts, even those with wall thicknesses greater than 0.125 in (3 mm).

Key properties of this structural resin are high heat deflection temperature, high flexural modulus, high tensile strength, excellent creep resistance and low moisture absorption.

- Black: AS-1133 HS BK 324
- Natural: AS-1133 HS NT

General			
Material Status	• Commercial: Active		
Availability	• Africa & Middle East • Asia Pacific	• Europe • North America	• South America
Filler / Reinforcement	• Glass Fiber Reinforcement, 33% Filler by Weight		
Additive	• Heat Stabilizer		
Features	• Good Chemical Resistance • Good Creep Resistance • Good Dimensional Stability	• Good Stiffness • Heat Stabilized • High Heat Resistance	• High Strength • Low Moisture Absorption
Uses	• Automotive Applications • Automotive Electronics • Automotive Under the Hood • Connectors • Fuel Lines • General Purpose	• Housings • Industrial Applications • Industrial Parts • Lawn and Garden Equipment • Machine/Mechanical Parts • Metal Replacement	• Oil/Gas Applications • Power/Other Tools • Thick-walled Parts • Valves/Valve Parts
RoHS Compliance	• RoHS Compliant		
Automotive Specifications	• ASTM D4000 PA121 G35 Color: BK324 Black • ASTM D4000 PA121 G35 Color: NT Natural • ASTM D4000 PPA0111 G33 GB145 KD200 KN090 PN080 YI265 Color: BK324 Black • ASTM D4000 PPA0111 G33 GB145 KD200 KN090 PN080 YI265 Color: NT Natural • BOSCH N28 BN05-OX1 Color: BK324 Black • BOSCH N28 BN05-OX1 Color: NT Natural • DELPHI M-6071 Color: NT Natural • FORD WSK-M4D843-A2 Color: BK324 Black • FORD WSK-M4D843-A2 Color: NT Natural • ISO 1874 PA6T/6I/66, MH, 12-120, GF33 Color: BK324 Black • ISO 1874 PA6T/6I/66, MH, 12-120, GF33 Color: NT Natural • SIEMENS S219536 Color: NT Natural		
Appearance	• Black	• Natural Color	
Forms	• Pellets		
Processing Method	• Injection Molding		

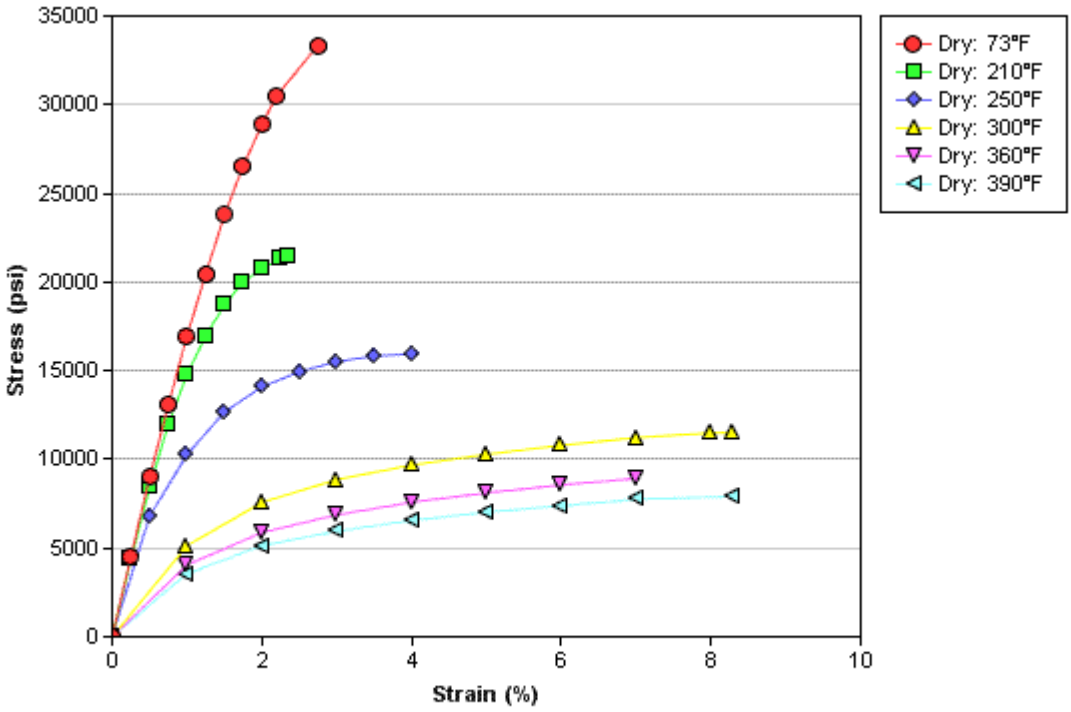
Physical	Dry	Conditioned	Unit	Test Method
Density	1.44	--	g/cm³	ISO 1183/B

Physical	Dry	Conditioned	Unit	Test Method
Molding Shrinkage				ASTM D955
Flow	0.0040	0.0	in/in	
Across Flow	0.0080	0.0020	in/in	
Water Absorption (24 hr)	0.21	--	%	ASTM D570
Mechanical	**Dry**	**Conditioned**	**Unit**	**Test Method**
Tensile Modulus				
--	1.90E+6	1.90E+6	psi	ASTM D638
--	1.77E+6	--	psi	ISO 527-2
Tensile Stress				
Yield	32600	--	psi	ISO 527-2
Break	32000	28000	psi	ASTM D638
Tensile Elongation				
Break	2.5	2.1	%	ASTM D638
Break	3.0	--	%	ISO 527-2
Flexural Modulus				
--	1.50E+6	1.50E+6	psi	ASTM D790
--	1.49E+6	--	psi	ISO 178
Flexural Strength				
--	47300	--	psi	ISO 178
Yield	46000	36900	psi	ASTM D790
Compressive Strength	40000	35800	psi	ASTM D695
Shear Strength	14700	12900	psi	ASTM D732
Poisson's Ratio	0.41	--		ASTM E132
Impact	**Dry**	**Conditioned**	**Unit**	**Test Method**
Charpy Notched Impact Strength	5.1	--	ft·lb/in²	ISO 179/1eA
Charpy Unnotched Impact Strength	39	--	ft·lb/in²	ISO 179/1eU
Notched Izod Impact				
--	1.6	1.4	ft·lb/in	ASTM D256
--	5.0	--	ft·lb/in²	ISO 180/1A
Unnotched Izod Impact	19	--	ft·lb/in	ASTM D256
Hardness	**Dry**	**Conditioned**	**Unit**	**Test Method**
Rockwell Hardness (R-Scale)	125	--		ASTM D785
Thermal	**Dry**	**Conditioned**	**Unit**	**Test Method**
Deflection Temperature Under Load				
66 psi, Annealed, 0.125 in	567	--	°F	ASTM D648
264 psi, Annealed, 0.125 in	545	--	°F	ASTM D648
264 psi, Annealed	531	--	°F	ISO 75-2/Af
Max. Continuous Use Temperature				ASTM D3045
-- [1]	327	--	°F	
-- [2]	365	--	°F	
Melting Temperature	590	--	°F	ISO 11357-3 ASTM D3418
CLTE				ASTM E831
Flow: 32 to 212°F	0.000013	--	in/in/°F	
Flow: 320 to 480°F	8.0E-6	--	in/in/°F	
Transverse: 32 to 212°F	0.000033	--	in/in/°F	

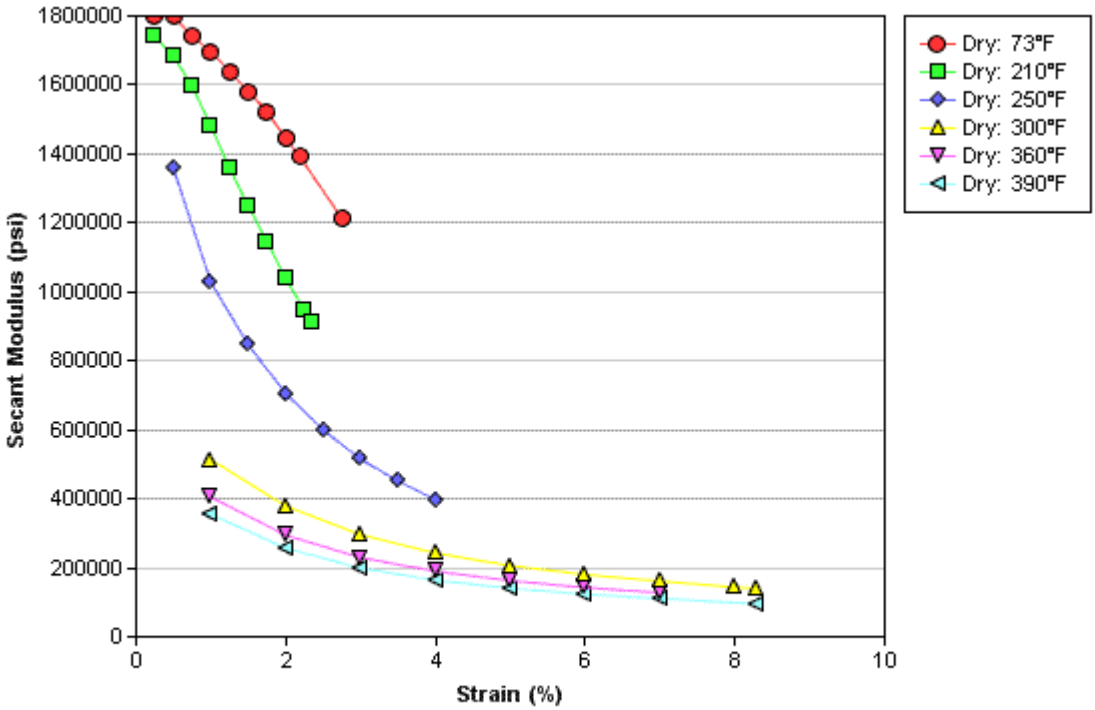
Thermal	Dry	Conditioned	Unit	Test Method
Transverse: 320 to 480°F	0.000072	--	in/in/°F	
Electrical	**Dry**	**Conditioned**	**Unit**	**Test Method**
Volume Resistivity	1.0E+16	2.0E+15	ohm·cm	ASTM D257
Dielectric Strength (0.125 in)	530	540	V/mil	ASTM D149
Dielectric Constant				ASTM D150
60 Hz	4.40	4.70		
1 MHz	4.20	4.30		
Dissipation Factor				ASTM D150
60 Hz	0.0050	0.0090		
1 MHz	0.017	0.022		
Arc Resistance	140	120	sec	ASTM D495
Flammability	**Dry**	**Conditioned**	**Unit**	**Test Method**
Flame Rating - UL [3] (0.125 in)	HB	--		UL 94
UL 746	**Dry**	**Conditioned**	**Unit**	**Test Method**
Comparative Tracking Index (CTI)	550	550	V	UL 746

Injection	Typical Value	Unit
Drying Temperature	248	°F
Drying Time	4.0	hr
Suggested Max Moisture	0.045	%
Hopper Temperature	175	°F
Rear Temperature	580 to 605	°F
Front Temperature	600 to 625	°F
Processing (Melt) Temp	610 to 650	°F
Mold Temperature	275	°F

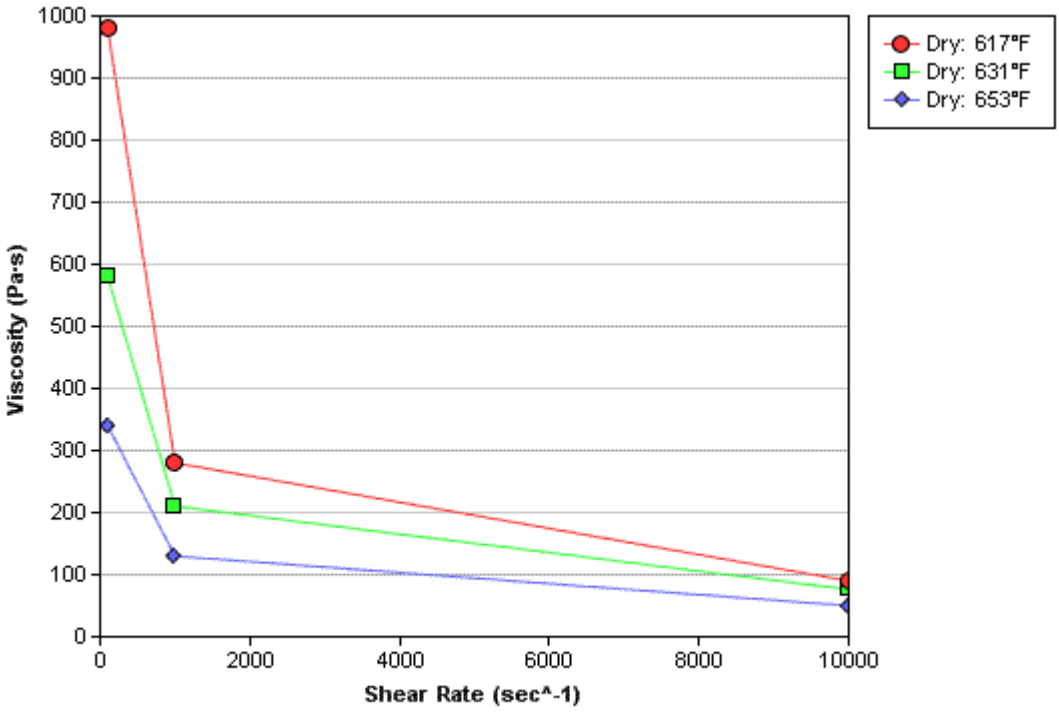
Isothermal Stress vs. Strain (ISO 11403-1)



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.

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Property values for individual batches will vary within specification limits. Unless otherwise noted, values shown are typical for uncolored resin; colorants may alter values. For Preliminary Data Sheets, values are typical of limited production and specifications are not yet established.

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