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 • Latin America	• North America
Filler / Reinforcement	• Glass Fiber, 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 • ASTM D6779 PA121G35 • BOSCH N28 BN05-OX1 BN0510-GF35-3Anf01SO Color: NT Natural • BOSCH N28 BN05-OX1 BN0510-GF35-3Asw01SO Color: BK324 Black • 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		

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Physical	Dry	Conditioned	Unit	Test method
Density	1.44	--	g/cm³	ISO 1183/B
Molding Shrinkage				ASTM D955
Flow	0.40	0.0	%	
Across Flow	0.80	0.20	%	
Water Absorption (24 hr)	0.21	--	%	ASTM D570

Mechanical	Dry	Conditioned	Unit	Test method
Tensile Modulus				
--	13100	13100	MPa	ASTM D638
--	12200	--	MPa	ISO 527-2
Tensile Stress				
Yield	225	--	MPa	ISO 527-2
Break	221	193	MPa	ASTM D638
Tensile Elongation				
Break	2.5	2.1	%	ASTM D638
Break	3.0	--	%	ISO 527-2
Flexural Modulus				
--	10300	10300	MPa	ASTM D790
--	10300	--	MPa	ISO 178
Flexural Strength				
--	326	--	MPa	ISO 178
Yield	317	254	MPa	ASTM D790
Compressive Strength	276	247	MPa	ASTM D695
Shear Strength	101	88.9	MPa	ASTM D732
Poisson's Ratio	0.41	--		ASTM E132

Impact	Dry	Conditioned	Unit	Test method
Charpy Notched Impact Strength	11	--	kJ/m²	ISO 179/1eA
Charpy Unnotched Impact Strength	82	--	kJ/m²	ISO 179/1eU
Notched Izod Impact				
--	85	75	J/m	ASTM D256
--	11	--	kJ/m²	ISO 180/1A
Unnotched Izod Impact	1000	--	J/m	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				
0.45 MPa, Annealed, 3.18 mm	297	--	°C	ASTM D648
1.8 MPa, Annealed, 3.18 mm	285	--	°C	ASTM D648
1.8 MPa, Annealed	277	--	°C	ISO 75-2/Af
Continuous Use Temperature				ASTM D3045
-- [1]	164	--	°C	
-- [2]	185	--	°C	
Melting Temperature	310	--	°C	ISO 11357-3 ASTM D3418

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Thermal	Dry	Conditioned	Unit	Test method
CLTE				ASTM E831
Flow : 0 to 100°C	0.000023	--	cm/cm/°C	
Flow : 160 to 249°C	0.000014	--	cm/cm/°C	
Transverse : 0 to 100°C	0.000059	--	cm/cm/°C	
Transverse : 160 to 249°C	0.00013	--	cm/cm/°C	

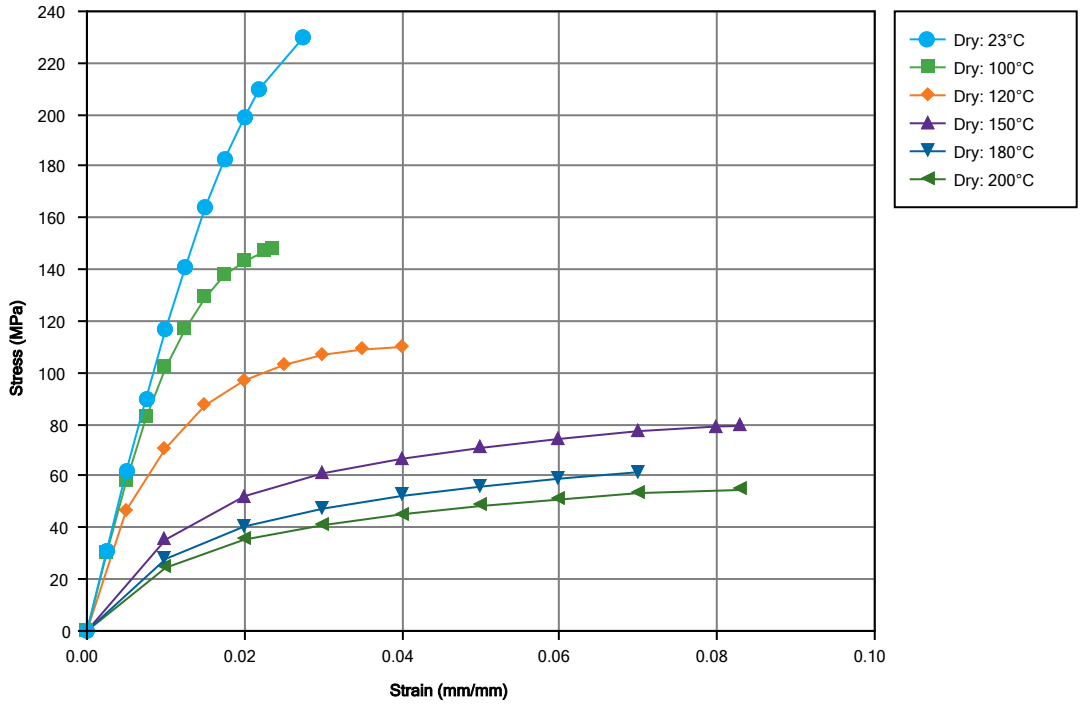
Electrical	Dry	Conditioned	Unit	Test method
Volume Resistivity	1.0E+16	2.0E+15	ohm·cm	ASTM D257
Dielectric Strength (3.18 mm)	21	21	kV/mm	ASTM D149
Dielectric Constant				ASTM D150
60 Hz	4.40	4.70		
1 MHz	4.20	4.30		
Dissipation Factor				ASTM D150
60 Hz	0.0050	0.0090		
1 MHz	0.017	0.022		
Arc Resistance	140	120	sec	ASTM D495
Comparative Tracking Index (CTI)	550	550	V	UL 746

Flammability	Dry	Conditioned	Unit	Test method
Flame Rating [3] (3.18 mm)	HB	--		UL 94

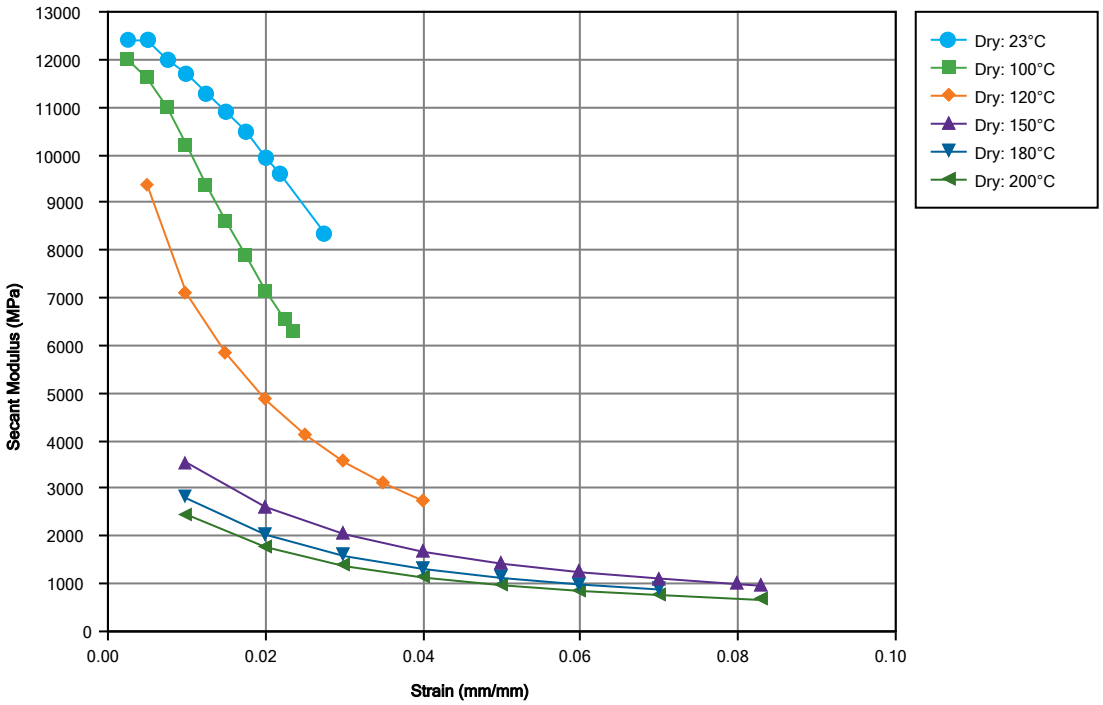
Optical	Dry	Conditioned	Unit	Test method
Transmittance [4]				ASTM D1003
1070 nm : 1.60 mm	> 35	--	%	
940 nm : 1.60 mm	> 30	--	%	

Injection	Dry	Unit
Drying Temperature	120	°C
Drying Time	4.0	hr
Suggested Max Moisture	0.045	%
Hopper Temperature	79.4	°C
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)



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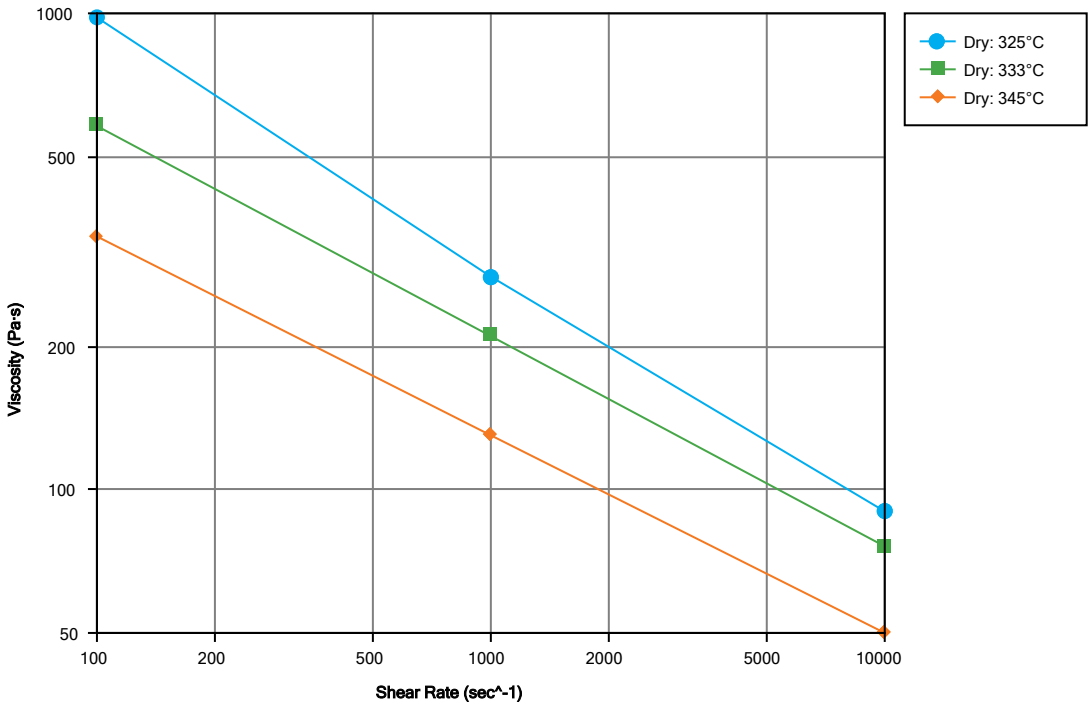
Viscosity vs. Shear Rate (ISO 11403-2)



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.

[4] Transmittance for natural grade

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