

Amodel® A-4145 HH

polyphthalamide

Amodel® A-4145 HH is a 45% glass fiber reinforced heat stabilized grade of polyphthalamide (PPA) that has been designed to provide outstanding property retention to thermal oxidative degradation at temperatures of 230°C. Other features are fast cycling and hot water moldability. This product is particularly suitable to air induction

applications within downsized automotive engines such as air induction charge air cooling and exhaust gas recirculation.

- Black: A-4145 HH BK324

General

Material Status	• Commercial: Active	
Availability	• Africa & Middle East • Asia Pacific • Europe	• Latin America • North America
Filler / Reinforcement	• Glass Fiber, 45% Filler by Weight	
Additive	• Heat Stabilizer • Lubricant	• Mold Release
Features	• Chemical Resistant • Creep Resistant • Fast Molding Cycle • Good Dimensional Stability • Good Stiffness • Heat Stabilized	• High Heat Resistance • High Strength • Hot Water Moldability • Laser Weldable • Low Moisture Absorption • Lubricated
Uses	• Automotive Applications • Automotive Under the Hood	• Metal Replacement
RoHS Compliance	• Contact Manufacturer	
Appearance	• Black	
Forms	• Pellets	
Processing Method	• Water-Heated Mold Injection Molding	

Physical	Dry	Conditioned	Unit	Test method
Density	1.57	--	g/cm ³	ISO 1183/A
Molding Shrinkage				ASTM D955
Flow	0.40	--	%	
Across Flow	0.80	--	%	
Water Absorption (24 hr)	0.37	--	%	ASTM D570

Mechanical	Dry	Conditioned	Unit	Test method
Tensile Modulus	16400	--	MPa	ISO 527-2
Tensile Stress				ISO 527-2
Break, 23°C	225	--	MPa	
Break, 200°C	70.0	--	MPa	
Break, 230°C	60.0	--	MPa	
Tensile Strain				ISO 527-2
Break, 23°C	1.8	--	%	
Break, 200°C	6.1	--	%	
Break, 230°C	6.3	--	%	

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Mechanical	Dry	Conditioned	Unit	Test method
Flexural Modulus (23°C)	14500	--	MPa	ISO 178
Flexural Stress (23°C)	325	--	MPa	ISO 178
Compressive Strength	179	172	MPa	ASTM D695
Shear Strength	89.6	75.8	MPa	ASTM D732
Poisson's Ratio	0.41	--		ASTM E132

Impact	Dry	Conditioned	Unit	Test method
Charpy Notched Impact Strength (23°C)	11	--	kJ/m ²	ISO 179/1eA
Charpy Unnotched Impact Strength (23°C)	80	--	kJ/m ²	ISO 179/1eU
Notched Izod Impact Strength (23°C)	10	--	kJ/m ²	ISO 180/1A
Unnotched Izod Impact Strength (23°C)	65	--	kJ/m ²	ISO 180/1U

Thermal	Dry	Conditioned	Unit	Test method
Heat Deflection Temperature 1.8 MPa, Unannealed	297	--	°C	ISO 75-2/A
Melting Temperature	327	--	°C	ASTM D570 ISO 11357-3
CLTE				ASTM E831
Flow : 0 to 100°C	2.0E-5	--	cm/cm/°C	
Flow : 100 to 200°C	1.5E-5	--	cm/cm/°C	
Transverse : 0 to 100°C	7.6E-5	--	cm/cm/°C	
Transverse : 100 to 200°C	1.2E-4	--	cm/cm/°C	

Electrical	Dry	Conditioned	Unit	Test method
Volume Resistivity	2.0E+15	5.0E+14	ohms·cm	ASTM D257
Dielectric Strength (1.60 mm)	20	20	kV/mm	ASTM D149
Dielectric Constant				ASTM D150
60 Hz	3.80	4.30		
1 MHz	3.60	3.40		
Dissipation Factor				ASTM D150
60 Hz	4.0E-3	0.020		
1 MHz	0.012	0.019		
Comparative Tracking Index (CTI)	600	600 V		UL 746
High Voltage Arc Tracking Rate (HVTR)	14.0	18.0 mm/min		UL 746

Flammability	Dry	Conditioned	Unit	Test method
Flame Rating ¹ (3.2 mm)	HB	--		UL 94

Injection	Dry	Unit
Drying Temperature	120	°C
Drying Time	4.0	hr
Suggested Max Moisture	0.030 to 0.060	%
Rear Temperature	318 to 324	°C
Front Temperature	327 to 332	°C
Processing (Melt) Temp	330 to 335	°C
Mold Temperature	66 to 93	°C

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Injection Notes

Injection Rate: 3 to 4 in/sec

Holding Pressure: 50% of injection pressure

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.

Proper Ventilation:

- It is strongly recommended that the processing site be correctly ventilated during molding. The ventilation should be placed directly above the injection nozzle to prevent exposure to fumes and gases that may be generated.
- In the event of a barrel purge where a large melt patty may be generated, it is often advisable to draw the purge patty into a bucket of water to reduce fumes.

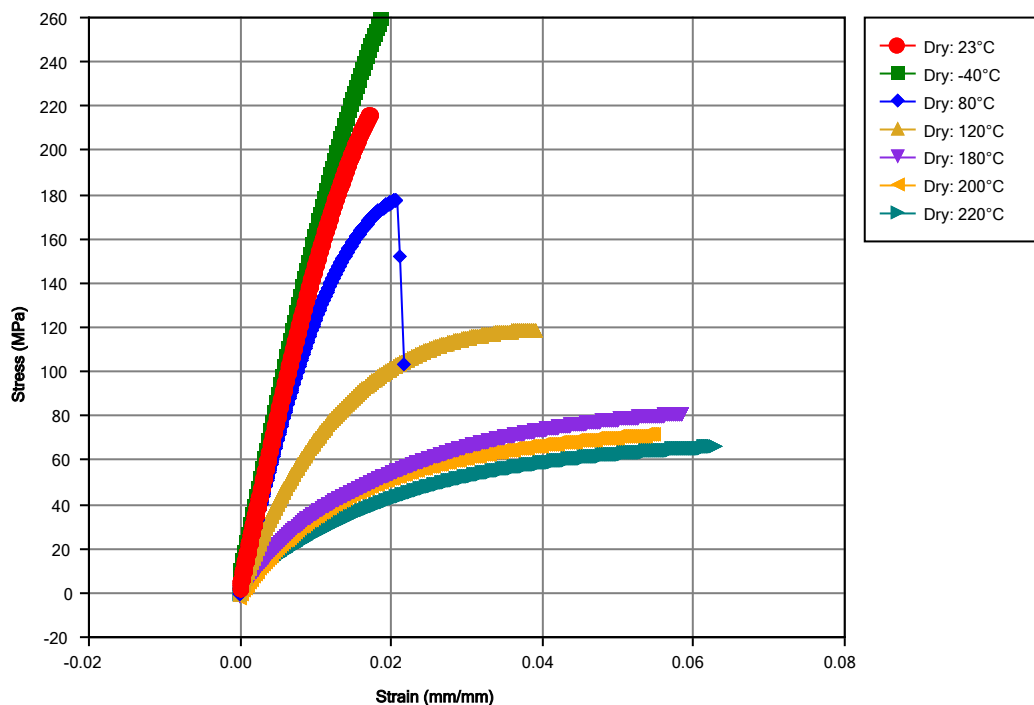
Hot Runners:

- Solvay does not encourage the use of hot runner technology with this product. For further clarification on hot runners, please contact your Solvay Specialty Polymers Technical Marketing representative.
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Isothermal Stress vs. Strain (ISO 11403-1)



Notes

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

¹ These flammability ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions.

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