

Product Data

A-1565 HS

AMODEL A-1565 HS resin is a 65% glass and mineral reinforced polyphthalamide (PPA) which exhibits a high deflection temperature and flexural modulus. This grade was designed specifically to be cost effective in applications requiring high stiffness, good dimensional stability, and good retention of stiffness at elevated temperatures.

The material can be easily processed using conventional injection molding equipment and methods.

Table 1 Typical Properties of AMODEL A-1565 HS Resin - ASTM Test Methods (See Table 2 for Properties by ISO Methods)

Property	ASTM Test Method	Typical Values ⁽¹⁾			
		U.S. Customary Units		SI Units	
		DAM ⁽²⁾	Units	DAM ⁽²⁾	Units
Mechanical					
Tensile Strength	D 638	19.0	kpsi	131	MPa
Tensile Elongation	D 638	1.2	%	1.2	%
Tensile Modulus	D 638	3,000	kpsi	20.7	GPa
Flexural Strength	D 790	30.5	kpsi	210	MPa
Flexural Modulus	D 790	2,600	kpsi	17.9	GPa
Compressive Strength ⁽³⁾	D 695	27.4	kpsi	189	MPa
Izod Impact, Notched	D 256	0.7	ft-lb/in	37	J/m
Izod Impact, Un-notched		7.7	ft-lb/in	411	J/m
Thermal					
Deflection Temperature ⁽⁴⁾ at 264 psi (1.8 MPa)	D 648	520	°F	271	°C
Melting Point	D 3418	592	°F	311	°C
Coefficient of Thermal Expansion	E 831				
32° to 212°F (0° to 100°C), FD ⁽⁵⁾		12	ppm/°F	21	ppm/°C
32° to 212°F (0° to 100°C), TD ⁽⁶⁾		17	ppm/°F	30	ppm/°C
320° to 480°F (160° to 249°C), FD ⁽⁵⁾		12	ppm/°F	22	ppm/°C
320° to 480°F (160° to 249°C), TD ⁽⁶⁾		38	ppm/°F	68	ppm/°C
Electrical					
Volume Resistivity	D 257	4 x 10 ¹⁴	ohm-cm	4 x 10 ¹⁴	ohm-cm
High Voltage Arc Resistance	D 495	125	sec	125	sec
Comparative Tracking Index	D 3638	>600	volts	>600	volts
General					
Specific Gravity	D 792	1.90		1.90	
Mold Shrinkage	D 955				
Flow Direction		0.3	%	0.3	%
Transverse Direction		0.5	%	0.5	%

⁽¹⁾ Actual properties of individual lots will vary within specification limits.

⁽²⁾ "Dry, as molded".

⁽³⁾ Test specimen - 0.5 x 0.5 x 1" (13 x 13 x 25 mm).

⁽⁴⁾ Annealed for 3 hours at 320°F (160°C).

⁽⁵⁾ FD = Flow Direction.

⁽⁶⁾ TD = Transverse Direction.

Table 2 Typical Properties of AMODEL A-1565 HS Resin - ISO Test Methods

Property	ISO Test Method	Typical Values ⁽¹⁾			
		U.S. Customary Units		SI Units	
		DAM ⁽²⁾	Units	DAM ⁽²⁾	Units
Mechanical					
Tensile Strength	527	20.0	kpsi	138	MPa
Tensile Elongation	527	1.0	%	1.0	%
Tensile Modulus	527	2,900	kpsi	20.0	GPa
Flexural Strength	178	30.6	kpsi	211	MPa
Flexural Modulus	178	2,460	kpsi	17.0	GPa
Izod Impact, Notched	180/1A	1.6	ft-lb/in ²	3.4	kJ/m ²
Charpy Impact, Notched	179/1eA	1.5	ft-lb/in ²	3.1	kJ/m ²
Thermal					
Melting Point	11357-3	592	°F	311	°C
Heat Deflection Temperature at 1.8 MPa	75Af	520	°F	271	°C
General					
Specific Gravity	1183A	1.90		1.90	

(1) Actual properties of individual batches will vary within specification limits.

(2) Dry as molded

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Drying

Resin should be dried before molding because excessive moisture will result in nozzle drool, reduced mechanical properties, poor surface appearance, and sprue sticking. Extremely wet resin will result in a foamy extrudate. The target moisture level is 0.03 to 0.06% (300 to 600 ppm) and the maximum recommended drying temperature is 135°C (275°F).

Although AMODEL resins are shipped with less than 0.15% moisture and packaged in moisture-proof foil-lined bags or boxes, the resin should be dried for optimum molding results. The preferred drying condition is 4 hours at 120°C (248°F). Alternatively, the resins can be dried for 8 hours at 90°C (194°F). In either case, a desiccant bed dryer with a dew point below -30°C (-22°F) should be used.

Drying Tips:

- Do not open containers until ready to process.
- Drying at temperatures higher than 125°C (257°F) may result in the darkening of natural colored pellets.
- If a thermogravimetric moisture analyzer is used, it should be set to 170°C (338°F)
- AMODEL resin in an open container needs to be dried as shown in the following table. The recommended drying time depends on how long the container has been open and the estimated relative humidity.

Drying Time at 120°C (248°F), hours					
Relative Humidity, %	Elapsed Time From Container Opening, hours				
	0.25	0.5	1	2	3
30	4.5	5.0	5.5	6.0	6.5
50	5.0	5.5	6.0	7.0	7.5
75	5.0	5.5	6.5	7.5	8.0
100	5.5	6.5	7.5	8.5	9.0

Injection Molding

AMODEL A-1565 HS resin can be readily injection molded in most screw injection molding machines. A general purpose screw is recommended, with minimum back pressure.

Barrel temperatures generally should range from 580° to 605°F (304° to 318°C) in the rear zone and gradually increase to 600° to 625°F (315° to 329°C) in the front zone. These conditions should give melt temperatures of 610° to 650°F (321° to 343°C).

A mold temperature of 275°F (135°C) is recommended to ensure full crystallinity in the typical molded part. High crystallinity results in optimum mechanical properties,

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excellent dimensional stability and good surface appearance. The use of lower mold temperatures may produce parts with lower crystallinity and, consequently, optimal performance may not be achieved.

Standard Packaging and Labeling

AMODEL A-1565 HS resin is packaged in foil lined, multiwall paper bags containing 25 kg (55.115 pounds) of material. Special packaging can be supplied upon request. Individual packages will be plainly marked with the product number, the color, the lot number, and the net weight.

Precautionary Labeling

On the basis of the toxicological, physical, and chemical properties of AMODEL A-1565 HS resin, labeling used on containers is as follows:

Caution! Handling and/or processing this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose, and throat.

Product Safety and Emergency Service

For product safety information or a Material Safety Data Sheet on a product of Solvay Advanced Polymers

1 (800) 621-4557

1 (770) 772-8880 outside of U.S.

For information or help in an emergency such as a spill, leak, fire or explosion, call day or night:

Emergency Health Information

1 (800) 621-4590

1 (770) 772-5177 outside of U.S.

Emergency Spill Information

CHEMTREC 1 (800) 424-9300

1 (703) 527-3887 outside of U.S.

collect calls accepted

For Additional Information

Technical Service

1 (800) 621-4557

Customer Service

1 (800) 848-9744