Product Data

AMODEL®
polyphthalamide

A-1340 HS

AMODEL® A-1340 HS is a 40% mineral/glass reinforced, heat stabilized polyphthalamide (PPA) which exhibits a high deflection temperature, high flexural modulus, high tensile strength and low warpage. Excellent dimensional stability and low moisture absorption are also characteristics of this resin.

AMODEL A-1340 HS resin can be easily processed using conventional equipment and methods.

Table 1 Typical Properties of AMODEL A-1340 HS Resin - ASTM Test Methods (See Table 2 for Properties by ISO Methods)

Property	ASTM Test Method	Typical Values [1] U.S. Customary Units DAM [2]	50% RH [3]	Units	SI Units DAM [2]	50% RH [3]	Units
Mechanical							
Tensile Strength	D 638	25.2	18.8	kpsi	174	130	MPa
Tensile Elongation	D 638	2.2	1.8	%	2.2	1.8	%
Tensile Modulus	D 638	1.60	1.60	Mpsi	11.0	11.0	GPa
Flexural Strength	D 790	38.1	33.7	kpsi	263	232	MPa
Flexural Modulus	D 790	1.54	1.57	Mpsi	10.6	10.8	GPa
Shear Strength	D 732	13.2	12.3	kpsi	91	85	MPa
Poisson's Ratio		0.38			0.38		
Izod Impact, Notched	D 256	0.8	0.8	ft-lb/in	45	45	J/m
Rockwell Hardness	D 785	125		R	125		R
Thermal							
Deflection Temperature	D 648						
at 264 psi, (1.8 MPa)		527		°F	275		°C
at 66 psi, (0.45 MPa)		554		°F	290		°C
Continuous Use Temperature, 5,000 hr.	D 3045	302		°F	150		°C
Continuous Use Temperature, 20,000 hr.		266		°F	130		°C
Melting Point	D 3418	595		°F	313		°C
Flammability (1/8" bar) [4]	UL-94	HB			HB		
Coefficient of Thermal Expansion	E 831						
32° to 212°F (0° to 100°C), FD[5], TD[6]		16, 26		µin./in.°F	29, 46		µm/m°C
320° to 480°F (160° to 250°C), FD[5], TD[6]		11, 51		µin./in.°F	19, 92		µm/m°C
Electrical							
Volume Resistivity	D 257	1×10^{16}	2×10^{15}	ohm-cm	1×10^{16}	2×10^{15}	ohm-cm
High Voltage Arc Resistance	D 495	150	130	sec	150	130	sec
Comparative Tracking Index	D 3638	550	550	volts	550	550	volts
Dielectric Constant at 100 Hz	D 150	4.5	4.7		4.5	4.7	
Dielectric Constant at 1 MHz		4.3	4.3		4.3	4.3	
Dissipation Factor at 100 Hz	D 150	0.005	0.008		0.005	0.008	
Dissipation Factor at 1 MHz		0.017	0.022		0.017	0.022	
General							
Specific Gravity	D 792	1.54			1.54		
Moisture Absorption, 24 hr	D 570	0.16		%	0.16		%
Mold Shrinkage, FD, TD	D 955	0.4, 0.7	0.3, 0.6	%	0.4, 0.7	0.3, 0.6	%

[1] Typical values, actual values of individual batches will vary within specification limits.
[2] DAM = "dry, as molded".
[3] Conditioned in accordance with ISO-1110, Accelerated Method.
[4] This flammability rating is not intended to reflect the hazards presented by this or any other material under actual fire conditions.
[5] FD = Flow direction.
[6] TD = Transverse direction.

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Table 2 Typical Properties of AMODEL A-1340 HS Resin - ISO Test Methods

Property	Temp., °C	ISO Test Method	Typical Values (1)(2) U.S. Customary Units Value	Units	SI Units Value	Units
Mechanical						
Tensile Strength	23	527	21.9	kpsi	151	MPa
	100	527	14.1	kpsi	97	MPa
	150	527	7.1	kpsi	49	MPa
	175	527	6.6	kpsi	46	MPa
Tensile Elongation	23	527	1.8	%	1.8	%
	100	527	2.3	%	2.3	%
	150	527	7.4	%	7.4	%
	175	527	7.0	%	7.0	%
Tensile Modulus	23	527	1.52	Mpsi	11.6	GPa
	100	527	1.16	Mpsi	8.0	GPa
	150	527	0.45	Mpsi	3.1	GPa
	175	527	0.39	Mpsi	2.7	GPa
Flexural Strength	23	178	33.9	kpsi	234	MPa
	100	178	22.5	kpsi	155	MPa
	150	178	9.2	kpsi	63	MPa
	175	178	8.0	kpsi	55	MPa
Flexural Modulus	23	178	1.32	Mpsi	9.1	GPa
	100	178	0.99	Mpsi	6.8	GPa
	150	178	0.36	Mpsi	2.5	GPa
	175	178	0.33	Mpsi	2.3	GPa
Izod Impact, Notched	23	180/1A	1.9	ft-lb/in^2	4.0	kJ/m^2
Izod Impact, Unnotched	23	180/1U	15	ft-lb/in^2	31	kJ/m^2
Charpy Impact, Notched	23	179/1eA	1.6	ft-lb/in^2	3.3	kJ/m^2
Charpy Impact, Unnotched	23	179/1eU	21	ft-lb/in^2	45	kJ/m^2
Thermal						
Melting Point		11357-3	595	°F	313	°C
Heat Deflection Temperature at 1.8 MPa		75Af	504	°F	262	°C
General						
Specific Gravity		1183A	1.48		1.48	

(1) Actual properties of individual batches will vary within specification limits.
(2) Values in this table determined using A-1340 HS BK resin.

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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

	Elapsed Time From Container Opening, hours				
Relative Humidity, %	**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-1340 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, 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-1340 HS resin is packaged in foil lined, multiwall paper bags containing 55.1 pounds (25 kg) 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-1340 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