Preliminary Product Data

AMODEL®
polyphthalamide

A-4422 HR WH117

AMODEL A-4422 HR WH117 resin is a 22% reinforced polyphthalamide (PPA), designed to give ***high crystallinity*** when molded in ***water-cooled molds.*** This material exhibits high heat resistance, high strength and stiffness over a broad temperature range, low moisture absorption, excellent chemical resistance, and excellent electrical properties.

AMODEL A-4422 HR WH117 resin processes readily on conventional equipment using water-cooled molds. Its rapid crystallization rate and high flow can result in short cycles and therefore high molding productivity and lower part cost.

This resin is a high-reflectivity white grade of AMODEL polyphthalamide.

TYPICAL PROPERTIES OF AMODEL A-4422 HR WH117 RESIN

Property	ISO Test Method	Typical Values [1] U.S. Customary Units DAM [2]	Units	SI Units DAM [2]	Units
Mechanical					
Tensile Strength	527	15.5	kpsi	107	MPa
Tensile Elongation	527	1.3	%	1.3	%
Tensile Modulus	527	1,380	kpsi	9.5	GPa
Flexural Strength	178	26.7	kpsi	184	MPa
Flexural Modulus	178	1,160	kpsi	8.0	GPa
Izod Impact, Notched	180/1A	1.2	ft-lb/in^2	2.5	kJ/m^2
Izod Impact, Notched	ASTM D256	0.5	ft-lb/in	27	J/m
Thermal					
Heat Deflection Temperature	75af				
at 66 psi (0.45 MPa)		583	°F	306	°C
at 264 psi (1.8 MPa)		509	°F	265	°C
Melting Point	11357-3	615	°F	324	°C
Coefficient of Thermal Expansion	ASTM E831				
32° to 122°F (0° to 50°C), FD[3], TD[4]		17, 35	ppm/°F	31, 64	ppm/°C
122° to 212°F (50° to 100°C), FD[3], TD[4]		19, 46	ppm/°F	35, 83	ppm/°C
212° to 302°F (100° to 150°C),FD[3], TD[4]		13, 59	ppm/°F	23, 106	ppm/°C
302° to 392°F (150° to 200°C), FD[3], TD[4]		12, 66	ppm/°F	21, 118	ppm/°C
General					
Optical Reflectivity at 430 - 700 nm	E 1331	>90	%	>90	%
Specific Gravity	1183A	1.47		1.47	
Moisture Absorption, 24 hours	ASTM D 570	0.20	%	0.20	%
Mold Shrinkage	D 955				
Flow Direction		0.5	%	0.5	%
Transverse Direction		0.6	%	0.6	%

(1) Values shown are based upon limited production. Final specifications may vary. Actual properties of individual batches will vary within specification limits.
(2) "dry, as molded".
(3) FD = Flow direction.
(4) TD = Transverse Direction.

Solvay
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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-4422 HR WH117 resin can be readily injection molded in most screw injection molding machines. A general purpose screw is recommended, with minimum back pressure.

The melt temperature should be between 625°F and 650°F (329°C and 343°C). Generally this can be achieved with barrel temperatures from 605° to 615°F (318° to 324°C) in the rear zone gradually increasing to 620° to 630°F (327° to 332°C) in the front zone.

Set injection pressure to give rapid injection, 3 to 4 in./sec (7.6 to 10 cm/sec). Adjust holding pressure to one-half injection pressure. Set hold time to maximize part weight. Transfer from injection to hold pressure at the screw position just before the part is completely filled. A mold temperature between 150°F and 200°F (65°C and 93°C) is high enough to achieve full crystallinity in the typical molded part with this resin.

Standard Packaging and Labeling

AMODEL A-4422 HR WH117 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-4422 HR WH117 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 or
1 (770) 772-8760 outside of U.S.

Customer Service
1 (800) 848-9744 or
1 (770) 772-8762 outside of U.S.