Product Data

AMODEL® polyphthalamide

AP-9240 NL

AMODEL AP-9240 NL resin is a 40% mineral-filled, impact-modified polyphthalamide (PPA). It was designed to provide a smooth molded surface suitable for many decorative applications. This resin offers excellent dimensional stability and chemical resistance, good mechanical properties and low warpage, and moisture absorption.

This material is readily injection molded using conventional equipment and methods.

Table 1 Typical Properties of AMODEL AP-9240 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	12.3	10.3	kpsi	85	71	MPa
Tensile Elongation	D 638	2.1	2.5	%	2.1	2.5	%
Tensile Modulus	D 638	0.89	0.83	Mpsi	6.1	5.8	GPa
Flexural Strength	D 790	21.4	19.6	kpsi	148	135	MPa
Flexural Modulus	D 790	0.81	0.81	Mpsi	5.6	5.5	GPa
Shear Strength	D 732	10.8	10.0	kpsi	74	69	MPa
Compressive Strength(4)	D 695	23.5		kpsi	162		MPa
Poisson's Ratio		0.32			0.32		
Izod Impact, Notched	D 256	1.0	1.2	ft-lb/in	55	65	J/m
Izod Impact, Unnotched	D 4812	13		ft-lb/in	665		J/m
Rockwell Hardness	D 785	125		R	125		R
Thermal							
Heat Deflection Temperature (5)	D 648						
at 264 psi (1.8 MPa)		310		°F	154		°C
Melting Point	D 570	595		°F	313		°C
General							
Specific Gravity	D 792	1.49			1.49		
Moisture Absorption, 24 hours	D 570	0.2		%	0.2		%
Mold Shrinkage	D 955						
Flow Direction		1.1		%	1.1		%
Transverse Direction		1.0		%	1.0		%

(1) Actual properties of individual batches will vary within specification limits. Properties are typical of uncolored resin. Colorants or other additives may alter values.
(2) Dry as molded.
(3) Conditioned to 50% RH in accordance with ISO-1110, Accelerated Method.
(4) Test specimen 0.5 x 0.5 x 1" (12.7 x 12.7 x 25.4 mm).
(5) 0.125 inch (3.2 mm) thick specimens annealed in air for 3 hours at 320°F (160°C).

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Table 2 Typical Properties of AMODEL AP-9240 NL Resin - ISO Test Methods

Property	Temp., °C	ISO Test Method	Typical Values (1) U.S. Customary Units Value	Units	SI Units Value	Units
Mechanical						
Tensile Strength	23	527	11.7	kpsi	81	MPa
	100	527	5.9	kpsi	41	MPa
	150	527	3.5	kpsi	24	MPa
	175	527	2.9	kpsi	20	MPa
Tensile Elongation	23	527	1.9	%	1.9	%
	100	527	8.9	%	8.9	%
	150	527	15.0	%	15.0	%
	175	527	12.3	%	12.3	%
Tensile Modulus	23	527	0.84	Mpsi	5.8	GPa
	100	527	0.46	Mpsi	3.2	GPa
	150	527	0.10	Mpsi	0.7	GPa
	175	527	0.09	Mpsi	0.6	GPa
Flexural Strength	23	178	16.0	kpsi	110	MPa
	100	178	8.8	kpsi	60	MPa
	150	178	2.7	kpsi	18	MPa
	175	178	2.2	kpsi	15	MPa
Flexural Modulus	23	178	0.62	Mpsi	4.3	GPa
	100	178	0.48	Mpsi	3.3	GPa
	150	178	0.10	Mpsi	0.7	GPa
	175	178	0.09	Mpsi	0.6	GPa
Izod Impact, Notched	23	180/1A	2.8	ft-lb/in^2	5.9	kJ/m^2
Izod Impact, Unnotched	23	180/1U	25	ft-lb/in^2	53	kJ/m^2
Charpy Impact, Notched	23	179/1eA	2.2	ft-lb/in^2	4.6	kJ/m^2
Charpy Impact, Unnotched	23	179/1eU	23	ft-lb/in^2	49	kJ/m^2
Thermal						
Melting Point		11357-3	595	°F	313	°C
Heat Deflection Temperature at 1.8 MPa		75Af	310	°F	154	°C
General						
Specific Gravity		1183A	1.49		1.49	

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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 AP-9240 NL 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 635°F and 645°F (335°C and 340°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, 2 to 4 in./sec (5 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 230°F and 300°F (110°C and 150°C) is recommended to produce good surface appearance and dimensional stability.

Standard Packaging and Labeling

AMODEL AP-9240 NL 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 toxicological, physical, and chemical properties of AMODEL AP-9240 NL 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