

Product Data

A-1240 L

AMODEL® A-1240 polyphthalamide (PPA) resins are 40% mineral filled resins that have high deflection temperature, flexural modulus, and tensile strength. They mold with low warpage, have excellent dimensional stability and low moisture absorption.

There are two versions of AMODEL A-1240 resin, “L” and “HS”. The L version will usually provide the smoother, higher gloss surface, while the HS version gives better long-term thermal aging properties.

Both AMODEL A-1240 resins can be easily processed using conventional equipment and methods.

Table 1 Typical Properties of AMODEL A-1240 L 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⁾	50% RH ⁽³⁾	Units	DAM ⁽²⁾	50% RH ⁽³⁾	Units
Mechanical							
Tensile Strength	D 638	15.0	13.5	kpsi	103	93	MPa
Tensile Elongation	D 638	1.6	1.2	%	1.6	1.2	%
Tensile Modulus	D 638	1.30	1.20	Mpsi	9.0	8.3	GPa
Flexural Strength	D 790	30.0	25.6	kpsi	207	177	MPa
Flexural Modulus	D 790	1.10	1.00	Mpsi	7.6	6.9	GPa
Shear Strength	D 732	13.9	13.5	kpsi	96	93	MPa
Compressive Strength	D 695	26.8		kpsi	185		MPa
Poisson's Ratio		0.29			0.29		
Izod Impact Notched	D 256	0.9	0.6	ft-lb/in	50	30	J/m
Izod Impact Un-notched		10		ft-lb/in	530		J/m
Rockwell Hardness	D 785	125		R	125		R
Thermal							
Deflection Temperature	D 648						
at 264 psi (1.8 MPa)		355		°F	179		°C
at 66 psi (0.45 MPa)		500		°F	260		°C
Melting Point	D 3418	590		°F	310		°C
Flammability ⁽⁴⁾ (1/8" bar)	UL-94	HB			HB		
Coefficient of Thermal Expansion	E 831						
32° to 212°F, (0° to 100°C), FD ⁽⁵⁾ ,TD ⁽⁶⁾		19, 22		µin./in.°F	34, 40		µm/m°C
320° to 480°F, (160° to 249°C), FD ⁽⁵⁾ ,TD ⁽⁶⁾		44, 53		µin./in.°F	79, 95		µm/m°C
Electrical							
Volume Resistivity	D 257	9 x 10 ¹⁵	2 x 10 ¹⁵	ohm-cm	9 x 10 ¹⁵	2 x 10 ¹⁵	ohm-cm
High Voltage Arc Resistance	D 495	125	120	sec	125	120	sec
Comparative Tracking Index	D 3638	550	550	volts	550	550	volts
Dielectric Constant at 100 Hz	D 150	4.20	4.40		4.20	4.40	
at 1 MHz		4.00	4.00		4.00	4.00	
Dissipation Factor at 100 Hz	D 150	0.006	0.007		0.006	0.007	
at 1 MHz		0.017	0.019		0.017	0.019	
General							
Specific Gravity	D 792	1.54			1.54		
Moisture Absorption, 24 hr	D 570	0.1		%	0.1		%
Mold Shrinkage Flow Direction	D 955	1.0	0.7	%	1.0	0.7	%
Transverse Direction		1.0	0.7	%	1.0	0.7	%

⁽¹⁾ Typical values, actual values of individual batches will vary within specification limits.

⁽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.

⁽²⁾ DAM = “dry, as molded”.

Table 2 Typical Properties of AMODEL A-1240 L Resin - ISO Test Methods

Property	Temp., °C	ISO Test Method	Typical Values ⁽¹⁾			
			U.S. Customary Units		SI Units	
			Value	Units	Value	Units
Mechanical						
Tensile Strength	23	527	15.1	kpsi	104	MPa
	100	527	10.1	kpsi	70	MPa
	150	527	4.2	kpsi	29	MPa
	175	527	3.5	kpsi	24	MPa
Tensile Elongation	23	527	1.6	%	1.6	%
	100	527	1.9	%	1.9	%
	150	527	9.1	%	9.1	%
	175	527	7.3	%	7.3	%
Tensile Modulus	23	527	1.45	Mpsi	10.1	GPa
	100	527	0.81	Mpsi	5.6	GPa
	150	527	0.16	Mpsi	1.1	GPa
	175	527	0.13	Mpsi	0.9	GPa
Flexural Strength	23	178	24.9	kpsi	172	MPa
	100	178	17.6	kpsi	121	MPa
	150	178	4.0	kpsi	27	MPa
	175	178	3.2	kpsi	22	MPa
Flexural Modulus	23	178	1.00	Mpsi	7.0	GPa
	100	178	0.87	Mpsi	6.0	GPa
	150	178	0.16	Mpsi	1.1	GPa
	175	178	0.13	Mpsi	0.9	GPa
Izod Impact, Notched	23	180/1A	2.2	ft-lb/in ²	4.7	kJ/m ²
Izod Impact, Unnotched	23	180/1U	11	ft-lb/in ²	24	kJ/m ²
Charpy Impact, Notched	23	179/1eA	1.9	ft-lb/in ²	4.1	kJ/m ²
Charpy Impact, Unnotched	23	179/1eU	14	ft-lb/in ²	29	kJ/m ²
Thermal						
Melting Point		11357-3	590	°F	310	°C
Heat Deflection Temperature at 1.8 MPa		75Af	346	°F	174	°C
General						
Specific Gravity		1183A	1.54		1.54	

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

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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.

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-1240 L 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°F to 605°F (304°C to 318°C) in the rear zone and gradually increase to 600°F to 625°F (315°C to 329°C) in the front zone. These conditions should give melt temperatures of 610°F to 650°F (321°C to 343°C).

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

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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-1240 L 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-1240 L 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