

## Product Data

### A-1230 L

AMODEL A-1230 polyphthalamide (PPA) resin is a 30% mineral filled resin that has high deflection temperature, flexural modulus, and tensile strength. The material molds with low warpage, has excellent dimensional stability and low moisture absorption.

AMODEL A-1230 L resin can be easily processed using conventional equipment and methods.

**Table 1 Typical Properties of AMODEL A-1230 L Resin - ASTM Test Methods** (See Table 2 for Properties by ISO Methods)

Property	ASTM Test Method	Typical Values <sup>(1)</sup>					
		U.S. Customary Units			SI Units		
		DAM <sup>(2)</sup>	50% RH <sup>(3)</sup>	Units	DAM <sup>(2)</sup>	50% RH <sup>(3)</sup>	Units
<b>Mechanical</b>							
Tensile Strength	D 638	15.1	11.6	kpsi	104	80	MPa
Tensile Elongation	D 638	1.6	1.2	%	1.6	1.2	%
Flexural Strength	D 790	29.0	19.0	kpsi	200	131	MPa
Flexural Modulus	D 790	900	800	kpsi	6.2	5.5	GPa
Shear Strength	D 732	11.8	11.3	kpsi	78	78	MPa
Compressive Strength	D 695	22.0	20.6	kpsi	152	142	MPa
Poisson's Ratio		0.31			0.31		
Rockwell Hardness, R scale	D 785	126			126		
Izod Impact, Notched	D 256	0.8	0.7	ft-lb/in	43	37	J/m
<b>Thermal</b>							
Deflection Temperature	D 648						
at 264 psi (1.8 MPa)		316		°F	158		°C
at 66 psi (0.45 MPa)		534		°F	279		°C
Continuous Use Temperature	D 3045						
5,000 hr.		311		°F	155		°C
20,000 hr.		275		°F	135		°C
Flammability <sup>(4)</sup> (1/8" bar)	UL-94	HB			HB		
Coefficient of Thermal Expansion	E 831						
32° to 212°F (0° to 100°C), FD <sup>(5)</sup>		23		ppm/°F	41		ppm/°C
TD <sup>(6)</sup>		27		ppm/°F	49		ppm/°C
320° to 480°F (160° to 249°C), FD <sup>(5)</sup>		49		ppm/°F	89		ppm/°C
TD <sup>(6)</sup>		62		ppm/°F	112		ppm/°C
<b>Electrical</b>							
Dielectric Strength, 1/8" (3.2 mm)	D 149	530	535	V/mil	21	21	kV/mm
Volume Resistivity	D 257	1 x 10 <sup>16</sup>	2 x 10 <sup>15</sup>	ohm-cm	1 x 10 <sup>16</sup>	2 x 10 <sup>15</sup>	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	D 150						
at 60 Hz		4.2	4.3		4.2	4.3	
at 1 MHz		3.9	4.0		3.9	4.0	
Dissipation Factor	D 150						
at 60 Hz		0.006	0.007		0.006	0.007	
at 1 MHz		0.018	0.020		0.018	0.020	
<b>General</b>							
Specific Gravity	D 792	1.45			1.45		
Moisture Absorption, 24 hr	D 570	0.12		%	0.12		%
Mold Shrinkage	D 955						
Flow Direction		1.1		%	1.1		%
Transverse Direction		1.1		%	1.1		%

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

(2) DAM = "dry, as molded".

(3) Conditioned in accordance with ISO-1110 - 1975, 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.

**Table 2 Typical Properties of AMODEL A-1230 L Resin - ISO Test Methods**

Property	ISO Test Method	Typical Values <sup>(1)</sup>			
		U.S. Customary Units		SI Units	
		DAM <sup>(2)</sup>	Units	DAM <sup>(2)</sup>	Units
<b>Mechanical</b>					
Tensile Strength	527	13.9	kpsi	96	MPa
Tensile Elongation	527	1.6	%	1.6	%
Tensile Modulus	527	1,000	kpsi	6.9	GPa
Charpy Impact, Notched	179/1eA	1.0	ft-lb/in <sup>2</sup>	2.2	kJ/m <sup>2</sup>
Charpy Impact, Unnotched	179/1eU	12	ft-lb/in <sup>2</sup>	26	kJ/m <sup>2</sup>
<b>Thermal</b>					
Melting Point	11357-3	594	°F	312	°C
Heat Deflection Temperature at 1.8 MPa	75Af	340	°F	171	°C
Heat Deflection Temperature at 0.45 MPa	75 Bf	500	°F	260	°C
<b>General</b>					
Specific Gravity	1183A	1.45		1.45	

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

(2) DAM = "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-1230 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 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-1230 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-1230 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**

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