Product Data

AMODEL®
polyphthalamide

AFA-4133 V0 Z

AMODEL AFA-4133 V0 Z is a 33% glass-fiber reinforced grade of polyphthalamide (PPA) resin that was developed specifically for connector applications requiring compatibility with both “infrared” and “vapor phase” soldering operations typically used by the electronics industry. This resin has been shown to perform under soldering conditions that cause blistering in many competitive resins.

This resin processes readily using conventional injection molding equipment and methods. It offers high flow and short molding cycles. The processing window is relatively broad, and mold temperatures as low as 150°F (65°C) can be used.

Typical Properties of AMODEL AFA-4133 V0 Z Resin

Property	ASTM Test Method	TYPICAL VALUES[1] U.S. Customary Units DAM[2]	U.S. Customary Units Units	SI Units DAM[2]	SI Units Units
Mechanical					
Tensile Strength	D 638	24.0	kpsi	165	MPa
Tensile Elongation	D 638	1.6	%	1.6	%
Flexural Strength	D 790	32.1	kpsi	221	MPa
Flexural Modulus	D 790	1.9	Mpsi	13.0	GPa
Izod Impact, Notched	D 256	1.6	ft-lb/in	85	J/m
Thermal					
Deflection Temperature at 264 psi (1.8 MPa)	D 648	563	°F	295	°C
Melting Point	D 3418	617	°F	325	°C
Flammability[3] 1/32" (0.8 mm) bar	UL-94	V0		V0	
Electrical					
Dielectric Strength, 1/16" (1.6 mm)	D 149	600	V/mil	24.5	kV/mm
Dielectric Constant at 1 MHz	D 150	4.2		4.2	
Dissipation Factor at 1 MHz	D 150	0.010		0.010	
Volume Resistivity[4]	D 257	1×10^{15}	ohm-cm	1×10^{15}	ohm-cm
Surface Resistivity[4]	D 257	1×10^{15}	ohm	1×10^{15}	ohm
General					
Specific Gravity	D 792	1.68		1.68	
Mold Shrinkage Flow Direction	D 955	0.3-0.5	%	0.3-0.5	%
Mold Shrinkage Transverse Direction		0.4-0.7	%	0.4-0.7	%

[1] Actual properties of individual batches will vary within specification limits. Values are typical of uncolored resin, addition of colorants or other additives may alter properties.
[2] “dry, as molded”.
[3] This flammability rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.
[4] Specimens conditioned for 96 hours at 95°F (35°C) and 90% RH.

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 AFA-4133 V0 Z 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 645°F (329°C and 340°C). Generally this can be achieved with barrel temperatures from 600° to 615°F (315° 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 generally high enough to achieve full crystallinity in the typical molded part with this resin.

Standard Packaging/ Labeling

AMODEL AFA-4133 V0 Z 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.

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