

Product Data

A-1933 HSL BK328

AMODEL A-1933 HSL BK328 is a 33% glass reinforced grade of polyphthalamide (PPA) resin. This grades was developed specifically for improved performance in a 50/50 ethylene glycol and water environment. This material was tested using the aggressive automotive coolant system, ethylene glycol with organic acid stabilizer, at 130°C (266°F). It exceeds the performance required by the automotive industry for polymeric materials exposed to high-temperature antifreeze solutions.

Potential applications include a variety of automotive components such as thermostat housings, heater core endcaps, heater hose connectors, and water inlets, outlets, and valves.

This material is readily processed using conventional injection molding equipment and methods.

Typical Properties of AMODEL A-1933 HSL BK328 Resin - ISO Test Methods

Property	ISO Test Method	Typical Values ⁽¹⁾			
		U.S. Customary Units		SI Units	
		Value	Units	Value	Units
Mechanical					
Tensile Strength	527	28.3	kpsi	195	MPa
Tensile Elongation	527	1.8	%	1.8	%
Tensile Modulus	527	1,670	kpsi	11.5	GPa
Flexural Strength	178	40.6	kpsi	280	MPa
Flexural Modulus	178	1,490	kpsi	10.3	GPa
Izod Impact, Notched	180/1A	3.9	ft-lb/in ²	8.1	kJ/m ²
Charpy Impact, Notched	179/1eA	3.9	ft-lb/in ²	8.2	kJ/m ²
Thermal					
Melting Point	11357-3	613	°F	323	°C
Heat Deflection Temperature at 1.8 MPa	75Af	563	°F	295	°C
General					
Specific Gravity	1183A	1.49		1.49	

Properties after Immersion in Glycol Solution⁽²⁾ for 1,000 hours at 130°C (266°F)

Tensile Strength	527	19.4	kpsi	134	MPa
Tensile Modulus	527	1,260	kpsi	8.7	GPa
Flexural Strength	178	28.9	kpsi	199	MPa
Flexural Modulus	178	1,130	kpsi	7.8	GPa

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

(2) Glycol solution was 50% Valvoline Zerex[®] G-05 and 50% water.

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). 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.
- 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-1933 HSL BK328 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 595°F to 626°F (313°C to 330°C) in the rear zone and gradually increase to 618°F to 643°F (325°C to 339°C) in the front zone. These conditions should give melt temperatures of 627°F to 665°F (330°C to 352°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, 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-1933 HSL BK328 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 toxicological, physical, and chemical properties of AMODEL A-1933 HSL BK328 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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