Amodel® HFZ A-4133L

polyphthalamide

Amodel® HFZ A-4133 L polyphthalamide (PPA) is a 33% glass-reinforced, hot water moldable resin. Key properties include heat resistance, reduced outgassing and high strength and stiffness over a broad temperature range. It also displays low moisture absorption, excellent chemical resistance and excellent electrical properties.

Amodel® HFZ A-4133 L resin is ideal for automotive electrical and electronic applications, including connectors, sockets, switches and sensors. It is also a good choice for under-hood enclosures that protect critical control systems such as anti-lock brakes, traction control, steering, electronic engine control, transmission and chassis control units.

- Black: HFZ A-4133 L BK 324
- Natural: HFZ A-4133 L NT

General		
Material Status	• Commercial: Active	
Availability	• Africa & Middle East • Asia Pacific • Europe	• Latin America • North America
Filler / Reinforcement	• Glass Fiber, 33% Filler by Weight	
Additive	• Lubricant	• Mold Release
Features	• Chemical Resistant • Creep Resistant • Fast Molding Cycle • Good Dimensional Stability • Good Stiffness • High Flow	• High Stiffness • High Strength • Hot Water Moldability • Low Moisture Absorption • Lubricated
Uses	• Automotive Applications • Automotive Electronics • Automotive Under the Hood • Bobbins • Camera Applications • Cell Phones • Connectors	• Electrical/Electronic Applications • General Purpose • Industrial Applications • Industrial Parts • Lawn and Garden Equipment • Machine/Mechanical Parts • Metal Replacement
RoHS Compliance	• RoHS Compliant	
Appearance	• Black	• Natural Color
Forms	• Pellets	
Processing Method	• Water-Heated Mold Injection Molding	

Physical	Typical Value	Unit	Test method
Density	1.46	g/cm³	ISO 1183/A
Molding Shrinkage			ASTM D955
Flow	0.50	%	
Across Flow	1.0	%	
Water Absorption (24 hr)	0.26	%	ASTM D570

Mechanical	Typical Value	Unit	Test method
Tensile Modulus	12000	MPa	ISO 527-2
Tensile Stress (Break)	180	MPa	ISO 527-2
Tensile Strain (Break)	1.8	%	ISO 527-2

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Mechanical	Typical Value	Unit	Test method
Flexural Modulus	11000	MPa	ISO 178
Flexural Stress	255	MPa	ISO 178

Impact	Typical Value	Unit	Test method
Charpy Notched Impact Strength	8.2	kJ/m²	ISO 179/1eA
Notched Izod Impact Strength	8.4	kJ/m²	ISO 180/1A
Unnotched Izod Impact Strength	40	kJ/m²	ISO 180/1U

Thermal	Typical Value	Unit	Test method
Heat Deflection Temperature			ISO 75-2/A
1.8 MPa, Unannealed	310	°C	
Melting Temperature (DSC)	327	°C	ISO 3146
CLTE			ASTM E831
Flow : 0 to 90°C	2.0E-5	cm/cm/°C	
Flow : 150 to 250°C	1.4E-5	cm/cm/°C	
Transverse : 0 to 90°C	6.3E-5	cm/cm/°C	
Transverse : 150 to 250°C	1.5E-4	cm/cm/°C	

Electrical	Typical Value	Unit	Test method
Surface Resistivity	1.0E+16	ohms	ASTM D257
Volume Resistivity	1.0E+15	ohms·cm	ASTM D257
Dielectric Strength	19	kV/mm	ASTM D149
Dielectric Constant			ASTM D150
60 Hz	3.90		
1 MHz	3.70		
Dissipation Factor			ASTM D150
60 Hz	6.0E-3		
1 MHz	0.016		
High Amp Arc Ignition (HAI)	PLC 0		UL 746
High Voltage Arc Resistance to Ignition (HVAR)	PLC 0		UL 746
High Voltage Arc Tracking Rate (HVTR)	PLC 0		UL 746
Hot-wire Ignition (HWI)	PLC 1		UL 746

Flammability	Typical Value	Unit	Test method
Flame Rating [1] (0.8 mm)	HB		UL 94
Glow Wire Flammability Index	800	°C	IEC 60695-2-12
Glow Wire Ignition Temperature	800	°C	IEC 60695-2-13

Injection	Typical Value	Unit
Drying Temperature	120	°C
Drying Time	4.0	hr
Suggested Max Moisture	0.030 to 0.060	%
Rear Temperature	318 to 324	°C
Front Temperature	327 to 332	°C
Processing (Melt) Temp	329 to 343	°C
Mold Temperature	66 to 93	°C

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Injection Notes

Injection Pressure: 3 to 4 in/sec

Storage:

- Amodel® compounds are shipped in moisture-resistant packages at moisture levels according to specifications. Sealed, undamaged bags should be preferably stored in a dry room at a maximum temperature of 50°C (122°F) and should be protected from possible damage. If only a portion of a package is used, the remaining material should be transferred into a sealable container. It is recommended that Amodel® resins be dried prior to molding following the recommendations found in this datasheet and/or in the Amodel® processing guide.

Notes

Typical properties: these are not to be construed as specifications.

[1] These flammability ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions.

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