Amodel® AE-4133
polyphthalamide

Amodel® AE-4133 is a 35% glass reinforced, hot-water moldable polyphthalamide (PPA) designed to work in the modern automotive electrical environment.

This grade features a high heat deflection temperature, high flexural modulus and high tensile strength, as well as excellent creep resistance and low moisture absorption.

- Black: AE-4133 BK902
- Natural: AE-4133 NT

General		
Material Status	• Commercial: Active	
Availability	• Africa & Middle East • Asia Pacific • Europe	• Latin America • North America
Filler / Reinforcement	• Glass Fiber, 35% Filler by Weight	
Features	• Chemical Resistant • Creep Resistant • Good Dimensional Stability • Good Stiffness • High Heat Resistance	• High Stiffness • High Strength • High Temperature Strength • Low Moisture Absorption
Uses	• Automotive Electronics • Connectors	• Electrical Parts • Electrical/Electronic Applications
RoHS Compliance	• Contact Manufacturer	
Appearance	• Black	• Natural Color
Forms	• Pellets	
Processing Method	• Injection Molding	

Physical	Dry	Conditioned	Unit	Test method
Density	1.45	--	g/cm³	ISO 1183/A
Molding Shrinkage				ASTM D955
Flow	0.40	--	%	
Across Flow	0.80	--	%	
Water Absorption (24 hr)	0.23	--	%	ASTM D570

Mechanical	Dry	Conditioned	Unit	Test method
Tensile Modulus (23°C)	12000	--	MPa	ISO 527-1
Tensile Stress (Break, 23°C)	210	--	MPa	ISO 527-2
Tensile Strain (Break, 23°C)	2.5	--	%	ISO 527-2
Flexural Modulus (23°C)	10700	--	MPa	ISO 178
Flexural Stress (23°C)	295	--	MPa	ISO 178
Flexural Strain	3.1	--	%	ISO 178

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Impact	Dry	Conditioned	Unit	Test method
Charpy Notched Impact Strength (23°C)	9.0	--	kJ/m²	ISO 179/1eA
Charpy Unnotched Impact Strength (23°C)	79	--	kJ/m²	ISO 179/1eU
Notched Izod Impact Strength (23°C)	9.2	--	kJ/m²	ISO 180/1A
Unnotched Izod Impact Strength (23°C)	68	--	kJ/m²	ISO 180/1U

Thermal	Dry	Conditioned	Unit	Test method
Deflection Temperature Under Load				ISO 75-2/A
1.8 MPa, Unannealed	> 300	--	°C	
Glass Transition Temperature	95.0	--	°C	DSC
Melting Temperature	327	--	°C	ISO 11357-3
CLTE				ASTM E831
Flow : 0 to 100°C [1]	2.0E-5	--	cm/cm/°C	
Flow : 100 to 200°C [2]	1.5E-5	--	cm/cm/°C	
Transverse : 0 to 100°C [3]	7.6E-5	--	cm/cm/°C	
Transverse : 100 to 200°C [4]	1.2E-4	--	cm/cm/°C	

Electrical	Dry	Conditioned	Unit	Test method
Volume Resistivity	5.6E+15	5.0E+14	ohms·cm	ASTM D257
Dielectric Strength (3.20 mm)	19	19	kV/mm	ASTM D149 IEC 60243-1
Dielectric Constant				ASTM D150 IEC 60250
60 Hz	4.10	4.30		
1 MHz	3.75	3.40		
Dissipation Factor				ASTM D150 IEC 60250
60 Hz	6.0E-3	0.020		
1 MHz	0.015	0.019		
Comparative Tracking Index (CTI)	600	600	V	UL 746A
Comparative Tracking Index	600	600	V	IEC 60112
High Voltage Arc Tracking Rate (HVTR)	14.0	18.0	mm/min	UL 746A

Flammability	Dry	Conditioned	Unit	Test method
Flame Rating [5] (3.2 mm)	HB	--		UL 94

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Injection	Dry	Unit
Drying Temperature	120	°C
Drying Time	4.0	hr
Suggested Max Moisture	0.030 to 0.060	%
Rear Temperature	320 to 330	°C
Middle Temperature	320 to 330	°C
Front Temperature	327 to 335	°C
Processing (Melt) Temp	330 to 345	°C
Mold Temperature [6]	90 to 100	°C

Injection Notes

Injection Rate: 3-4 inch/second (7.5-10 cm/sec)
Holding Pressure: 50% of injection pressure

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] This is equivalent to 0.20EE-04 /°K by ISO 11359

[2] This is equivalent to 0.15EE-04 /°K by ISO 11359

[3] This is equivalent to 0.76EE-04 /°K by ISO 11359

[4] This is equivalent to 0.12EE-04 /°K by ISO 11359

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

[6] Note that higher mold temperatures may be necessary for very thin-walled parts, or to achieve better quality surface finish.

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