

## Solvay Specialty Polymers Amodel® A-1133 HS Polyphthalamide (PPA), 33% Glass Fiber (Dry)

Category : Polymer , Thermoplastic , Polyphthalamide (PPA) , Polyphthalamide (PPA), 30% Glass Fiber Reinforced

### Material Notes:

Amodel® A-1133 HS is a 33% glass reinforced, heat stabilized polyphthalamide (PPA) with a high heat deflection temperature, high flexural modulus and high tensile strength. Excellent creep resistance and low moisture absorption are also characteristic of this resin. Testing conducted on samples dry as molded and samples conditioned to 50% relative humidity in accordance with ISO-1110, Accelerated Method. Features: Good Chemical Resistance; Good Creep Resistance; Good Dimensional Stability; Good Stiffness; High Heat Resistance; High Stiffness; High Strength; High Temperature Strength; Low Moisture Absorption. Uses: Automotive Applications; Automotive Electronics; Automotive Interior Parts; Automotive Under the Hood; Cell Phones; Connectors; Fuel Lines; Housings; Industrial Applications; Industrial Parts; Machine/Mechanical Parts; Metal Replacement; Power/Other Tools. Injection Molding Notes: 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. Additional Properties: Transmittance - ASTM D1003 (1.60 mm): > 30 %; Transmittance - ASTM D1003 (1.60 mm): > 30 % Automotive Specifications 3M 11-0003-5762-1 X62 4200; ASTM D4000 PA121 G35 Color: BK324 Black; ASTM D4000 PA121 G35 Color: NT Natural; ASTM D6779 PA121G35; BOSCH N28 BN05-OX1 BN0510-GF35-0Anf01SO Color: NT Natural; BOSCH N28 BN05-OX1 BN0510-GF35-0Asw01SO Color: BK-324 Black; CHRYSLER MS-DB-478 CPN4242 Color: NT Natural; CHRYSLER MS-DB-478 Type A CPN3598 Color: BK324 Black; DELPHI M-53290 Color: BK324 Black; DELPHI M-53290 Color: NT Natural; DELPHI M-6071 Color: NT Natural; DELPHI MS-5216 Color: BK324 Black; DELPHI MS-5216 Color: NT Natural; FORD WSP-M4D843-A Color: BK324 Black; FORD WSP-M4D843-A Color: NT Natural; GM GMP.PPA.004 Color: BK324 Black; GM GMP.PPA.004 Color: NT Natural; GM GMW15702-110020 >PPA+GF33< (A4, A22, A64, BA633, DC1473, G20, KM1158, KS2300, LS20, RS9, SS260, Z1) Color: NT Natural; GM GMW16356P-PPA-GF35 Color: BK-324 Black; GM GMW16356P-PPA-GF35 Color: NT Natural; IMDS ID 21195756 Color: Black; IMDS ID 21195756 Color: Natural; TRW S-13318701 Color: BK543 Black; VALEO VMS-4470 Color: BK324 Black; VALEO VMS-4470 Color: NT Natural; YAZAKI YPES-25-02-135 Color: Colors; YAZAKI YPES-25-02-135 Color: NT Natural. Information provided by Solvay Specialty Polymers.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Solvay-Specialty-Polymers-Amodel-A-1133-HS-Polyphthalamide-PPA-33-Glass-Fiber-Dry.php](http://www.lookpolymers.com/polymer_Solvay-Specialty-Polymers-Amodel-A-1133-HS-Polyphthalamide-PPA-33-Glass-Fiber-Dry.php)

Physical Properties	Metric	English	Comments
Density	1.48 g/cc	0.0535 lb/in <sup>3</sup>	ISO 1183
Filler Content	33 %	33 %	Glass Fiber
Water Absorption	0.23 % @Time 86400 sec	0.23 % @Time 24.0 hour	ISO 62
Linear Mold Shrinkage, Flow	0.0040 cm/cm	0.0040 in/in	
Linear Mold Shrinkage, Transverse	0.0080 cm/cm	0.0080 in/in	ASTM D955

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell R	125	125	ASTM D785
Tensile Strength at Break	72.0 MPa	10400 psi	4; ISO 527-2
	@Temperature 175 Å°C	@Temperature 347 Å°F	
	80.0 MPa	11600 psi	4; ISO 527-2
	@Temperature 150 Å°C	@Temperature 302 Å°F	
Tensile Strength	148 MPa	21500 psi	4; ISO 527-2
	@Temperature 100 Å°C	@Temperature 212 Å°F	
	233 MPa	33800 psi	4; ISO 527-2
	@Temperature 23.0 Å°C	@Temperature 73.4 Å°F	
Tensile Strength	221 MPa	32100 psi	ASTM D638
Elongation at Break	2.5 %	2.5 %	ASTM D638
	2.5 %	2.5 %	
	@Temperature 23.0 Å°C	@Temperature 73.4 Å°F	ISO 527-2
Elongation at Break	2.9 %	2.9 %	ISO 527-2
	@Temperature 100 Å°C	@Temperature 212 Å°F	
	8.5 %	8.5 %	ISO 527-2
	@Temperature 175 Å°C	@Temperature 347 Å°F	
Elongation at Break	8.7 %	8.7 %	ISO 527-2
	@Temperature 150 Å°C	@Temperature 302 Å°F	
	Tensile Modulus	13.1 GPa	1900 ksi
Tensile Modulus	4.30 GPa	624 ksi	4; ISO 527-2
	@Temperature 175 Å°C	@Temperature 347 Å°F	
	6.70 GPa	972 ksi	4; ISO 527-2
	@Temperature 150 Å°C	@Temperature 302 Å°F	
Tensile Modulus	10.8 GPa	1570 ksi	4; ISO 527-2
	@Temperature 100 Å°C	@Temperature 212 Å°F	
	13.4 GPa	1940 ksi	4; ISO 527-2
	@Temperature 23.0 Å°C	@Temperature 73.4 Å°F	

Mechanical Properties	Metric	English	Comments
	80.0 MPa @Temperature 175 Â°C	11600 psi @Temperature 347 Â°F	4; ISO 178
	93.0 MPa @Temperature 150 Â°C	13500 psi @Temperature 302 Â°F	4; ISO 178
	227 MPa @Temperature 100 Â°C	32900 psi @Temperature 212 Â°F	4; ISO 178
	319 MPa @Temperature 23.0 Â°C	46300 psi @Temperature 73.4 Â°F	4; ISO 178
Flexural Modulus	11.4 GPa	1650 ksi	ASTM D790
	3.60 GPa @Temperature 175 Â°C	522 ksi @Temperature 347 Â°F	ISO 178
	4.00 GPa @Temperature 150 Â°C	580 ksi @Temperature 302 Â°F	ISO 178
	9.80 GPa @Temperature 100 Â°C	1420 ksi @Temperature 212 Â°F	ISO 178
	11.6 GPa @Temperature 23.0 Â°C	1680 ksi @Temperature 73.4 Â°F	ISO 178
Compressive Strength	185 MPa	26800 psi	ASTM D695
Poissons Ratio	0.41	0.41	ASTM E132
Shear Strength	101 MPa	14600 psi	ASTM D732
Izod Impact, Notched	0.800 J/cm	1.50 ft-lb/in	ASTM D256
Izod Impact, Unnotched	7.70 J/cm	14.4 ft-lb/in	ASTM D256
Izod Impact, Notched (ISO)	8.80 kJ/mÂ²	4.19 ft-lb/inÂ²	Type 1, Notch A; ISO 180
Izod Impact, Unnotched (ISO)	49.0 kJ/mÂ²	23.3 ft-lb/inÂ²	Type 1; ISO 180
Charpy Impact Unnotched	7.30 J/cmÂ²	34.7 ft-lb/inÂ²	Type 1, Edgewise; ISO 179
Charpy Impact, Notched	0.950 J/cmÂ²	4.52 ft-lb/inÂ²	Type 1, Edgewise; ISO 179

Thermal Properties	Metric	English	Comments
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Thermal Properties	Metric	English	Comments
CTE, linear, Parallel to Flow	@Temperature 0.000 - 100 Å°C	@Temperature 32.0 - 212 Å°F	2
	27.0 Åµm/m-Å°C	15.0 Åµin/in-Å°F	2
	@Temperature 100 - 200 Å°C	@Temperature 212 - 392 Å°F	2
CTE, linear, Transverse to Flow	55.0 Åµm/m-Å°C	30.6 Åµin/in-Å°F	TMA; ASTM E831
	@Temperature 0.000 - 100 Å°C	@Temperature 32.0 - 212 Å°F	
	110 Åµm/m-Å°C	61.1 Åµin/in-Å°F	TMA; ASTM E831
	@Temperature 100 - 200 Å°C	@Temperature 212 - 392 Å°F	
Melting Point	313 Å°C	595 Å°F	ISO 11357-3
	313 Å°C	595 Å°F	DSC
Maximum Service Temperature, Air	164 - 185 Å°C	327 - 365 Å°F	Continuous Use
Deflection Temperature at 0.46 MPa (66 psi)	297 Å°C	567 Å°F	Annealed; ASTM D648
	@Thickness 3.20 mm	@Thickness 0.126 in	
Deflection Temperature at 1.8 MPa (264 psi)	280 Å°C	536 Å°F	Unannealed; ISO 75-2/A
	285 Å°C	545 Å°F	Annealed; ASTM D648
	@Thickness 3.20 mm	@Thickness 0.126 in	
Flammability, UL94	HB	HB	
	@Thickness 3.20 mm	@Thickness 0.126 in	

Electrical Properties	Metric	English	Comments
Volume Resistivity	1.00e+16 ohm-cm	1.00e+16 ohm-cm	ASTM D257
Dielectric Constant	4.2	4.2	ASTM D150
	@Frequency 1.00e+6 Hz	@Frequency 1.00e+6 Hz	
	4.4	4.4	ASTM D150
	@Frequency 60.0 Hz	@Frequency 60.0 Hz	
Dielectric Strength	21.0 kV/mm	533 kV/in	ASTM D149
	@Thickness 3.20 mm	@Thickness 0.126 in	
Dissipation Factor	0.0050	0.0050	ASTM D150

Electrical Properties	@Frequency 60.0 Hz Metric	@Frequency 60.0 Hz English	Comments
	0.017	0.017	
	@Frequency 1.00e+6 Hz	@Frequency 1.00e+6 Hz	ASTM D150
Arc Resistance	140 sec	140 sec	ASTM D495
Comparative Tracking Index	550 V	550 V	UL 746

Processing Properties	Metric	English	Comments
Rear Barrel Temperature	304 - 318 Â°C	579 - 604 Â°F	
Front Barrel Temperature	316 - 329 Â°C	601 - 624 Â°F	
Melt Temperature	321 - 343 Â°C	610 - 649 Â°F	
Mold Temperature	135 Â°C	275 Â°F	
Drying Temperature	120 Â°C	248 Â°F	
	@Time 14400 sec	@Time 4.00 hour	
Moisture Content	<= 0.045 %	<= 0.045 %	

Descriptive Properties	Value	Comments
Additive	Heat Stabilizer	
Availability	Africa & Middle East	
	Asia Pacific	
	Europe	
	Latin America	
	North America	
Color	Black; Natural	
Form	Pellets	
Part Marking Code	>PA6T/6I/66-GF33<	ISO 11469
Processing Technique	Injection Molding	
RoHS Compliance	RoHS Compliant	
UL File Number	E95746 (Global)	

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