

Amodel® AT-1002 HS

Polyphthalamide
Solvay Specialty Polymers

Message:

Amodel® AT-1002 HS is a neat, toughened, heat stabilized polyphthalamide (PPA) resin that offers superior retention of properties after humid thermal aging; high impact at low temperature and better mechanical properties than many unreinforced thermoplastic polyester and nylon resins. This material was specifically designed for automotive electrical/electronic applications such as connectors, sockets and sensors.
Natural: AT-1002 HS NT

General Information				
Additive		Impact modifier		
		heat stabilizer		
		Lubricant		
		demoulding		
Features		Impact modification		
		Low warpage		
		Low temperature impact resistance		
		Good chemical resistance		
		Hot water formability		
		Thermal Stability		
		Lubrication		
		ductility		
Uses		Valve/valve components		
		Machine/mechanical parts		
		Metal substitution		
		Parts under the hood of a car		
		Automotive Electronics		
		Application in Automobile Field		
RoHS Compliance		RoHS compliance		
Appearance		Natural color		
Forms		Particle		
Processing Method		Water temperature mold injection molding		
Multi-Point Data		Isothermal Stress vs. Strain (ISO 11403-1)		
Physical	Dry	Conditioned	Unit	Test Method
Density	1.13	--	g/cm ³	ISO 1183/A
Molding Shrinkage				ASTM D955
Flow	2.0	--	%	ASTM D955
Transverse flow	2.1	--	%	ASTM D955

Water Absorption (24 hr)	0.50	--	%	ASTM D570
Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Modulus				
--	2760	2760	MPa	ASTM D638
23°C	2760	--	MPa	ISO 527-2
100°C	2100	--	MPa	ISO 527-2
Tensile Stress				
Yield, 23°C	75.2	--	MPa	ISO 527-2
Yield, 100°C	38.6	--	MPa	ISO 527-2
Fracture, 23°C	68.3	--	MPa	ISO 527-2
--	83.4	76.5	MPa	ASTM D638
Tensile Strain				
Yield, 23°C	5.0	--	%	ISO 527-2
Yield, 100°C	3.7	--	%	ISO 527-2
Fracture ¹	80	100	%	ASTM D638
Fracture, 23°C	15	--	%	ISO 527-2
Flexural Modulus				
--	2210	2280	MPa	ASTM D790
23°C	2280	--	MPa	ISO 178
100°C	1720	--	MPa	ISO 178
Flexural Strength				
--	103	73.1	MPa	ASTM D790
23°C	79.3	--	MPa	ISO 178
100°C	49.6	--	MPa	ISO 178
Shear Strength	64.1	57.2	MPa	ASTM D732
Impact	Dry	Conditioned	Unit	Test Method
Charpy Notched Impact Strength (23°C)	13	--	kJ/m ²	ISO 179/1eA
Charpy Unnotched Impact Strength (23°C)	No Break	--		ISO 179/1eU
Notched Izod Impact				
--	140	150	J/m	ASTM D256
23°C	13	--	kJ/m ²	ISO 180/1A
Unnotched Izod Impact Strength (23°C)	No Break	--		ISO 180/1U
Instrumented Dart Impact				ASTM D3763
Total Energy	--	47.5	J	ASTM D3763
Total energy	54.2	--	J	ASTM D3763
osmotic shock				ASTM D3763
-- ²	--	4003	N	ASTM D3763
-- ³	4448	--	N	ASTM D3763
Thermal	Dry	Conditioned	Unit	Test Method

Deflection Temperature Under Load				
0.45 MPa, annealed	163	--	°C	ASTM D648
1.8 MPa, not annealed	118	--	°C	ISO 75-2/Af
1.8 MPa, annealed	121	--	°C	ASTM D648
Melting Temperature	315	--	°C	ISO 11357-3, ASTM D3418
Linear thermal expansion coefficient				ASTM E831
Flow: 0 to 100°C	7.8E-5	--	cm/cm/°C	ASTM E831
Flow: 100 to 200°C	1.3E-4	--	cm/cm/°C	ASTM E831
Lateral: 0 to 100°C	9.3E-5	--	cm/cm/°C	ASTM E831
Lateral: 100 to 200°C	1.4E-4	--	cm/cm/°C	ASTM E831
Electrical	Dry	Conditioned	Unit	Test Method
Surface Resistivity	8.0E+13	2.5E+13	ohms	ASTM D257
Volume Resistivity	1.2E+16	7.0E+14	ohms·cm	ASTM D257
Dielectric Strength	17	17	kV/mm	ASTM D149
Dielectric Constant				ASTM D150
60 Hz	3.30	3.80		ASTM D150
1 MHz	3.30	3.80		ASTM D150
Dissipation Factor				ASTM D150
60 Hz	4.0E-3	0.018		ASTM D150
1 MHz	0.016	0.035		ASTM D150
Comparative Tracking Index	> 600	> 600	V	ASTM D3638
High Voltage Arc Tracking Rate (HVTR)	12.0	12.0	mm/min	UL 746
Flammability	Dry	Conditioned	Unit	Test Method
Flame Rating ⁴	HB	--		UL 94
Injection	Dry	Unit		
Drying Temperature	110		°C	
Drying Time	4.0		hr	
Suggested Max Moisture	0.060		%	
Rear Temperature	304		°C	
Front Temperature	324		°C	
Processing (Melt) Temp	321 - 329		°C	
Mold Temperature	< 90.0		°C	
Screw Speed	100 - 200		rpm	
Screw Compression Ratio	2.5:1.0			
Injection instructions				
Injection Rate: 1 to 3 in/secHolding Pressure: 50% of injection pressureStorage: 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.				
NOTE				

1.	Type 4
2.	Maximum Load
3.	Maximum load
4.	These flammability ratings do not represent the risk of these materials or any other materials in actual fire situations.

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