

Amodel® AT-1002 HS

polyphthalamide

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

Material Status	• Commercial: Active	
Availability	• Africa & Middle East • Asia Pacific • Europe	• Latin America • North America
Additive	• Heat Stabilizer • Impact Modifier	• Lubricant • Mold Release
Features	• Chemical Resistant • Ductile • Heat Stabilized • Hot Water Moldability	• Impact Modified • Low Temperature Impact Resistance • Low Warpage • Lubricated
Uses	• Automotive Applications • Automotive Electronics • Automotive Under the Hood	• Machine/Mechanical Parts • Metal Replacement • Valves/Valve Parts
RoHS Compliance	• RoHS Compliant	
Automotive Specifications	• DELPHI MS008756 Color: NT Natural • FORD WSS-M98P14-A3 ¹ • GM GMP.PPA.015 Color: Natural	• GM GMW16799P-PPA Color: Natural • IMDS ID 11974222 Color: Natural
Appearance	• Natural Color	
Forms	• Pellets	
Processing Method	• Water-Heated Mold Injection Molding	

Physical	Dry	Conditioned	Unit	Test method
Density	1.13	--	g/cm ³	ISO 1183/A
Molding Shrinkage				ASTM D955
Flow	2.0	--	%	
Across Flow	2.1	--	%	
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 527-1
100°C	2100	--	MPa	ISO 527-1

Amodel® AT-1002 HS

polyphthalamide

Mechanical	Dry	Conditioned	Unit	Test method
Tensile Stress				
Yield, 23°C	75.2	-- MPa		ISO 527-2
Yield, 100°C	38.6	-- MPa		ISO 527-2
Break, 23°C	68.3	-- MPa		ISO 527-2
--	83.4	76.5 MPa		ASTM D638
Tensile Strain				ISO 527-2
Yield, 23°C	5.0	-- %		
Yield, 100°C	3.7	-- %		
Break, 23°C	15	-- %		
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/m²		ISO 179/1eA
Charpy Unnotched Impact Strength (23°C)		-- kJ/m²		ISO 179/1eU
Notched Izod Impact				
--	140	150 J/m		ASTM D256
23°C	13	-- kJ/m²		ISO 180/1A
Unnotched Izod Impact Strength (23°C)		-- kJ/m²		ISO 180/1U
Instrumented Dart Impact (Total Energy)	54.2	47.5 J		ASTM D3763
Penetration Impact ²	4448	4003 N		ASTM D3763
Thermal	Dry	Conditioned	Unit	Test method
Deflection Temperature Under Load				
0.45 MPa, Annealed	163	-- °C		ASTM D648
1.8 MPa, Unannealed	118	-- °C		ISO 75-2/Af
1.8 MPa, Annealed	121	-- °C		ASTM D648
Melting Temperature	315	-- °C		ISO 11357-3 ASTM D3418
CLTE				ASTM E831
Flow : 0 to 100°C	7.8E-5	-- cm/cm/°C		
Flow : 100 to 200°C	1.3E-4	-- cm/cm/°C		
Transverse : 0 to 100°C	9.3E-5	-- cm/cm/°C		
Transverse : 100 to 200°C	1.4E-4	-- cm/cm/°C		

Amodel® AT-1002 HS

polyphthalamide

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		
1 MHz	3.30	3.80		
Dissipation Factor				ASTM D150
60 Hz	4.0E-3	0.018		
1 MHz	0.016	0.035		
Comparative Tracking Index	> 600	> 600	V	ASTM D3638
High Voltage Arc Tracking Rate (HVTR)	12.0	12.0	mm/min	UL 746A

Flammability	Dry	Conditioned	Unit	Test method
Flame Rating ³	HB	--		UL 94

Injection	Dry	Unit
Drying Temperature	110	°C
Drying Time	4.0	hr
Suggested Max Moisture	0.030 to 0.060	%
Rear Temperature	304	°C
Front Temperature	324	°C
Processing (Melt) Temp	321 to 329	°C
Screw Speed	100 to 200	rpm
Screw Compression Ratio	2.5:1.0	

Injection Notes

INJECTION RATE: 1 to 3 in/sec

HOLDING PRESSURE: 50% of injection pressure

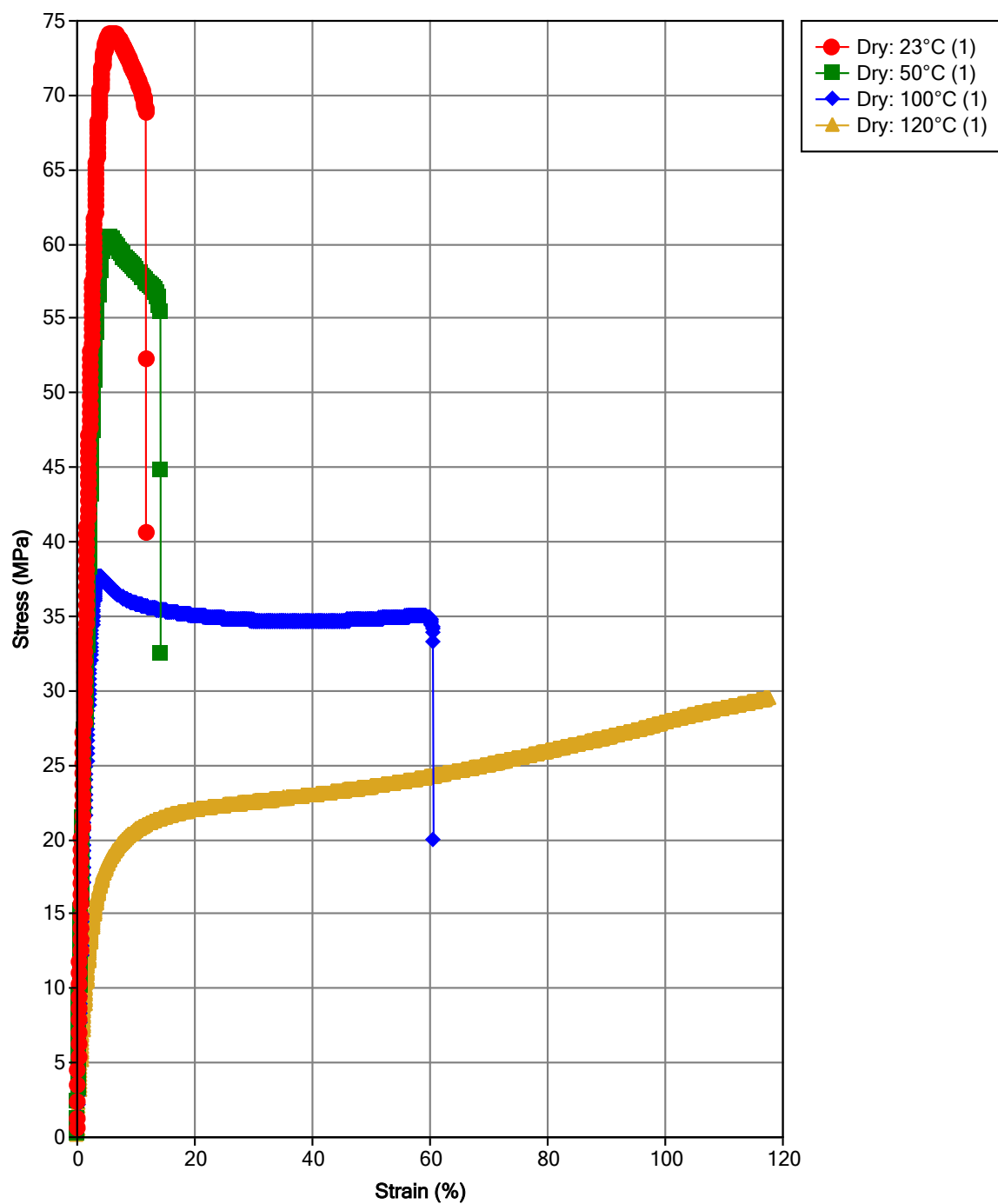
STORAGE:

- 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.

Amodel® AT-1002 HS

polyphthalamide

Isothermal Stress vs. Strain (ISO 11403)



Data Notes

(1) - 2 in/min (50 mm/min)

Amodel® AT-1002 HS

polyphthalamide

Notes

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

¹ Approval listed in Ford MATS system to this fuel performance specification, as well as to Ford WSS-M98P14-A7.

² Maximum Load

³ This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

www.syensqo.com

Safety Data Sheets (SDS) are available by emailing us or contacting your sales representative. Always consult the appropriate SDS before using any of our products.

Neither Syensqo nor any of its affiliates makes any warranty, express or implied, including merchantability or fitness for use, or accepts any liability in connection with this product, related information or its use. Some applications of which Syensqo's products may be proposed to be used are regulated or restricted by applicable laws and regulations or by national or international standards and in some cases by Syensqo's recommendation, including applications of food/feed, water treatment, medical, pharmaceuticals, and personal care. Only products designated as part of the Solviva® family of biomaterials may be considered as candidates for use in implantable medical devices. The user alone must finally determine suitability of any information or products for any contemplated use in compliance with applicable law, the manner of use and whether any patents are infringed. The information and the products are for use by technically skilled persons at their own discretion and risk and does not relate to the use of this product in combination with any other substance or any other process. This is not a license under any patent or other proprietary right.

All trademarks and registered trademarks are property of the companies that comprise the Syensqo or their respective owners.

© 2024 2023 Syensqo. All rights reserved.

