SOLVAY
asking more from chemistry®

Amodel® A-1145 HS

polyphthalamide

Amodel® A-1145 HS is a 45% glass reinforced, heat stabilized polyphthalamide (PPA) with a high heat deflection temperature, very high flexural modulus and very high tensile strength. Excellent creep resistance and low moisture absorption are also characteristic of this resin.

- Black: A-1145 HS BK 324
- Natural: A-1145 HS NT

General

Material Status	• Commercial: Active		
Availability	• Africa & Middle East • Asia Pacific	• Europe • Latin America	• North America
Filler / Reinforcement	• Glass Fiber, 45% Filler by Weight		
Additive	• Heat Stabilizer		
Features	• Good Chemical Resistance • Good Creep Resistance • Good Dimensional Stability	• Good Stiffness • High Heat Resistance • High Strength	• High Temperature Strength • Low Moisture Absorption
Uses	• Automotive Applications • Automotive Electronics • Automotive Under the Hood • Connectors	• Housings • Industrial Applications • Industrial Parts • Machine/Mechanical Parts	• Metal Replacement • Power/Other Tools • Valves/Valve Parts
RoHS Compliance	• RoHS Compliant		
Automotive Specifications	• 3M 11-0003-5762-1 Color: BK324 Black • ASTM D4000 PA121 G45 Color: BK324 Black • ASTM D4000 PA121 G45 Color: NT Natural • ASTM D4000 PPA0120 G46 A95726 AA002 CD295 GB159 MF015Z Color: BN575 Brown • ASTM D6779 PA121G45 • BOSCH 9 916 365 011 Color: BK 324 Black • BOSCH 9 916 365 011 Color: NT Natural • CHRYSLER MS-DB-478 Type B CPN3567 Color: Black • FORD WSB-M4D861-A Color: BK324 Black • FORD WSB-M4D861-A Color: NT Natural • GM GMP.PPA.008 Color: BK324 Black • GM GMP.PPA.008 Color: NT Natural • GM GMW16356P-PPA-GF45 Color: BK-324 Black • GM GMW16356P-PPA-GF45 Color: NT Natural • ISO 1874 PA6T/6I/66, MH, 12-160, GF45 Color: NT Natural • TRW S-13301201 Color: BK324 Black		
Appearance	• Black	• Natural Color	
Forms	• Pellets		
Processing Method	• Injection Molding		

Physical	Dry	Conditioned	Unit	Test method
Density	1.59	--	g/cm³	ISO 1183/A

Amodel® A-1145 HS
polyphthalamide

Physical	Dry	Conditioned	Unit	Test method
Molding Shrinkage				ASTM D955
Flow	0.20	0.10	%	
Across Flow	0.60	0.10	%	
Water Absorption (24 hr)	0.12	--	%	ASTM D570

Mechanical	Dry	Conditioned	Unit	Test method
Tensile Modulus				
--	17200	17200	MPa	ASTM D638
23°C	16800	--	MPa	ISO 527-2
100°C	11200	--	MPa	ISO 527-2
150°C	8000	--	MPa	ISO 527-2
175°C	5380	--	MPa	ISO 527-2
Tensile Stress				
Break, 23°C	263	--	MPa	ISO 527-2
Break, 100°C	173	--	MPa	ISO 527-2
Break, 150°C	84.8	--	MPa	ISO 527-2
Break, 175°C	75.8	--	MPa	ISO 527-2
--	259	228	MPa	ASTM D638
Tensile Elongation				
Break	2.6	2.1	%	ASTM D638
Break, 23°C	2.7	--	%	ISO 527-2
Break, 100°C	2.5	--	%	ISO 527-2
Break, 150°C	7.2	--	%	ISO 527-2
Break, 175°C	6.5	--	%	ISO 527-2
Flexural Modulus				
--	13800	13800	MPa	ASTM D790
23°C	15900	--	MPa	ISO 178
100°C	13000	--	MPa	ISO 178
150°C	5380	--	MPa	ISO 178
175°C	4900	--	MPa	ISO 178
Flexural Strength				
--	363	294	MPa	ASTM D790
23°C	377	--	MPa	ISO 178
100°C	267	--	MPa	ISO 178
150°C	111	--	MPa	ISO 178
175°C	94.5	--	MPa	ISO 178
Compressive Strength (25.4 mm)	194	--	MPa	ASTM D695
Shear Strength	108	91.7	MPa	ASTM D732
Poisson's Ratio	0.41	--		ASTM E132

Impact	Dry	Conditioned	Unit	Test method
Charpy Notched Impact Strength (23°C)	10	--	kJ/m²	ISO 179/1eA
Charpy Unnotched Impact Strength (23°C)	92	--	kJ/m²	ISO 179/1eU
Notched Izod Impact				
--	110	100	J/m	ASTM D256
23°C	10	--	kJ/m²	ISO 180/1A

Amodel® A-1145 HS
polyphthalamide

Impact	Dry	Conditioned	Unit	Test method
Unnotched Izod Impact				
--	1100	--	J/m	ASTM D256
23°C	61	--	kJ/m²	ISO 180/1U

Hardness	Dry	Conditioned	Unit	Test method
Rockwell Hardness (R-Scale)	125	--		ASTM D785

Thermal	Dry	Conditioned	Unit	Test method
Deflection Temperature Under Load				
0.45 MPa, Annealed, 3.20 mm	301	--	°C	ASTM D648
1.8 MPa, Unannealed	281	--	°C	ISO 75-2/A
1.8 MPa, Annealed, 3.20 mm	287	--	°C	ASTM D648
Continuous Use Temperature				ASTM D3045
-- [1]	165	--	°C	
-- [2]	185	--	°C	
Melting Temperature	310	--	°C	ISO 11357-3 ASTM D3418
CLTE				ASTM E831
Flow : 0 to 100°C	1.4E-5	--	cm/cm/°C	
Flow : 100 to 200°C	3.5E-5	--	cm/cm/°C	
Transverse : 0 to 100°C	5.0E-5	--	cm/cm/°C	
Transverse : 100 to 200°C	1.5E-4	--	cm/cm/°C	

Electrical	Dry	Conditioned	Unit	Test method
Volume Resistivity	1.0E+16	2.0E+15	ohms·cm	ASTM D257
Dielectric Strength (3.20 mm)	23	23	kV/mm	ASTM D149
Dielectric Constant				ASTM D150
60 Hz	4.60	4.90		
1 MHz	4.40	4.50		
Dissipation Factor				ASTM D150
60 Hz	5.0E-3	9.0E-3		
1 MHz	0.016	0.021		
Arc Resistance	145	125	sec	ASTM D495
Comparative Tracking Index (CTI)	550	550	V	UL 746

Flammability	Dry	Conditioned	Unit	Test method
Flame Rating [3] (3.20 mm)	HB	--		UL 94

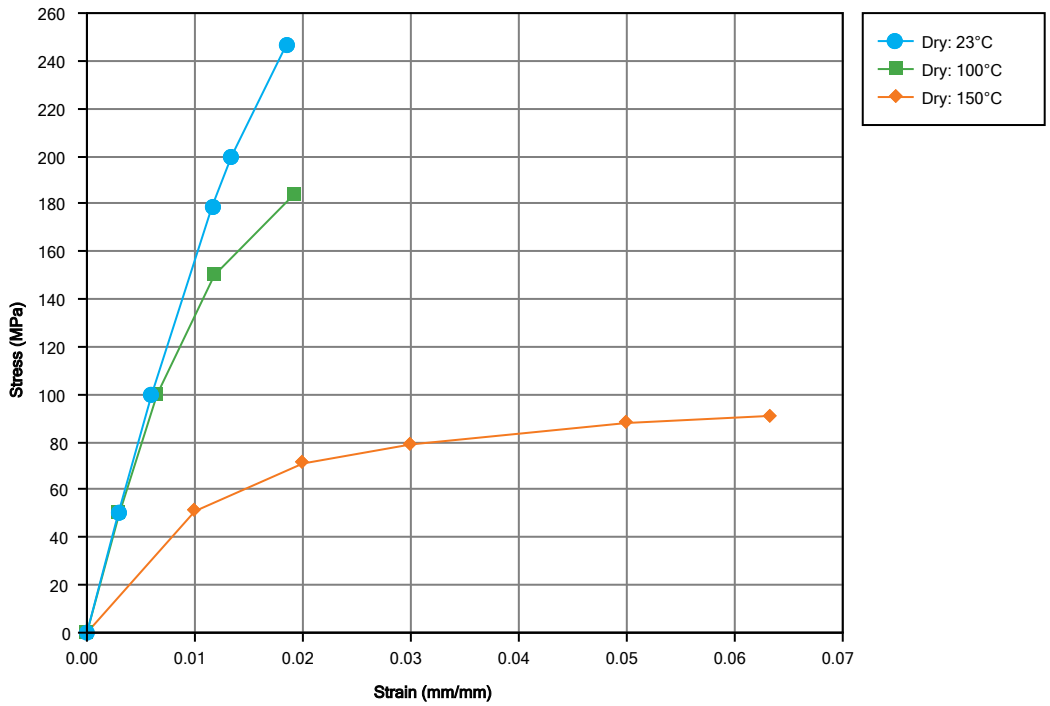
Injection	Dry	Unit
Drying Temperature	120	°C
Drying Time	4.5	hr
Suggested Max Moisture	0.045	%
Rear Temperature	304 to 318	°C
Front Temperature	316 to 329	°C
Processing (Melt) Temp	321 to 343	°C
Mold Temperature	135	°C

Injection Notes

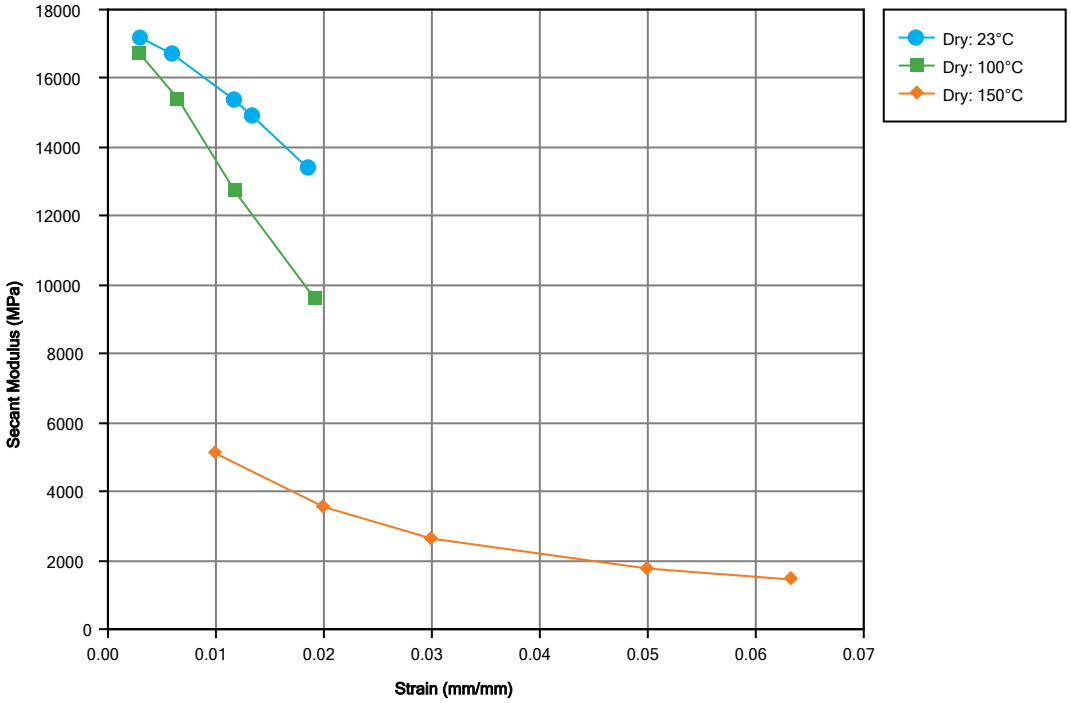
Storage:

- 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.

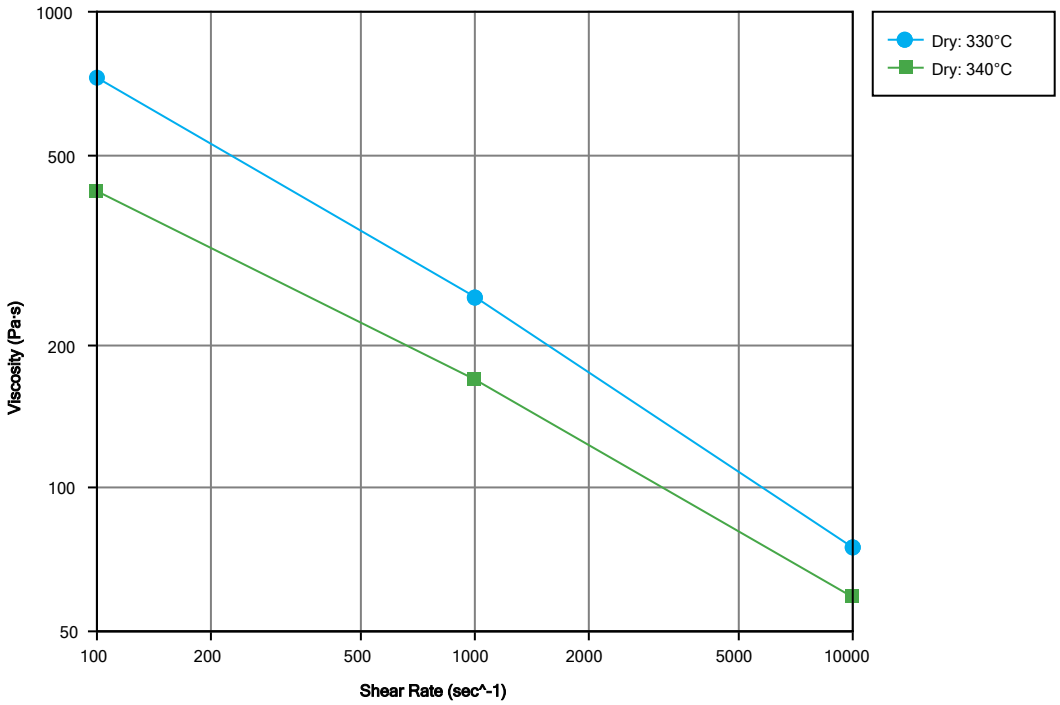
Isothermal Stress vs. Strain (ISO 11403-1)



Secant Modulus vs. Strain (ISO 11403-1)



Viscosity vs. Shear Rate (ISO 11403-2)



Amodel® A-1145 HS
polyphthalamide

Notes

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

[1] 20000 hr

[2] 5000 hr

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

www.solvay.com

SpecialtyPolymers.EMEA@solvay.com | Europe, Middle East and Africa
SpecialtyPolymers.Americas@solvay.com | Americas
SpecialtyPolymers.Asia@solvay.com | Asia and Australia

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 Solvay Specialty Polymers 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 Solvay'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 Solvay'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 Solvay Group or their respective owners.

© 2015 Solvay Specialty Polymers. All rights reserved.

SOLVAY
asking more from chemistry®