

Solvay Specialty Polymers Amodel® AS-1145 HS Polyphthalamide (PPA) (Unverified Data**)

Category : Polymer , Thermoplastic , Polyphthalamide (PPA)

Material Notes:

Amodel AS-1145 HS is a 45% glass reinforced heat stabilized polyphthalamide (PPA) resin that provides excellent structural integrity in molded parts, even those with wall thicknesses greater than 0.125 inch (3 mm). Key properties of this structural resin are high heat deflection temperature, high flexural modulus, high tensile strength, excellent creep resistance, and low moisture absorption. - Black: AS-1145 HS BK 324 - Natural: AS-1145 HS NTData is presented for dry polymer unless noted as 'conditioned'. Information provided by Solvay Specialty Polymers.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Solvay-Specialty-Polymers-Amodel-AS-1145-HS-Polyphthalamide-PPA-nbspUnverified-Data.php

Physical Properties	Metric	English	Comments
Density	1.56 g/cc	0.0564 lb/in ³	ISO 1183/A
Filler Content	45 %	45 %	Glass Fiber Reinforcement
Water Absorption	0.12 % @Time 86400 sec	0.12 % @Time 24.0 hour	ASTM D570
Linear Mold Shrinkage, Flow	0.0010 cm/cm	0.0010 in/in	Conditioned; ASTM D955
	0.0020 cm/cm	0.0020 in/in	ASTM D955
Linear Mold Shrinkage, Transverse	0.0010 cm/cm	0.0010 in/in	Conditioned; ASTM D955
	0.0060 cm/cm	0.0060 in/in	ASTM D955

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell R	125	125	R-Scale; ASTM D785
Tensile Strength at Break	228 MPa	33100 psi	Conditioned; ASTM D638
	259 MPa	37600 psi	ASTM D638
	263 MPa	38100 psi	ISO 527-2
Elongation at Break	2.1 %	2.1 %	Conditioned; ASTM D638
	2.6 %	2.6 %	ASTM D638
	2.7 %	2.7 %	ISO 527-2
Tensile Modulus	16.0 GPa	2320 ksi	ISO 527-2
	17.2 GPa	2490 ksi	Conditioned; ASTM D638

Mechanical Properties	Metric ¹	English ¹	Comments
Flexural Strength	376 MPa	54500 psi	ISO 178
Flexural Yield Strength	294 MPa	42600 psi	Conditioned; ASTM D790
	363 MPa	52600 psi	ASTM D790
Flexural Modulus	13.8 GPa	2000 ksi	ASTM D790
	13.8 GPa	2000 ksi	Conditioned; ASTM D790
	14.8 GPa	2150 ksi	ISO 178
Compressive Strength	302 MPa	43800 psi	Conditioned; ASTM D695
	314 MPa	45500 psi	ASTM D695
Poissons Ratio	0.41	0.41	ASTM E132
Shear Modulus	5.67 - 6.10 GPa	822 - 885 ksi	Calculated
Shear Strength	91.7 MPa	13300 psi	Conditioned; ASTM D732
	108 MPa	15700 psi	ASTM D732
Izod Impact, Notched	1.00 J/cm	1.87 ft-lb/in	Conditioned; ASTM D256
	1.20 J/cm	2.25 ft-lb/in	ASTM D256
	13.0 J/cm	24.4 ft-lb/in	ASTM D256
Izod Impact, Notched (ISO)	14.0 kJ/m ²	6.66 ft-lb/in ²	ISO 180/1A
Charpy Impact, Notched	1.20 J/cm ²	5.71 ft-lb/in ²	ISO 179/1eA

Thermal Properties	Metric	English	Comments
CTE, linear, Parallel to Flow	11.0 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	6.11 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	TMA; ASTM E831
	@Temperature 160 - 249 $^\circ\text{C}$	@Temperature 320 - 480 $^\circ\text{F}$	
	14.0 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	7.78 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	TMA; ASTM E831
	@Temperature 0.000 - 100 $^\circ\text{C}$	@Temperature 32.0 - 212 $^\circ\text{F}$	
CTE, linear, Transverse to Flow	50.0 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	27.8 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	ASTM E831
	@Temperature 0.000 - 100 $^\circ\text{C}$	@Temperature 32.0 - 212 $^\circ\text{F}$	
	100 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	55.6 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	ASTM E831
	@Temperature 160 -	@Temperature 320 -	

Thermal Properties	249 °C Metric	480 °F English	Comments
Melting Point	312 °C	594 °F	Peak; ASTM D3418
	312 °C	594 °F	ISO 11357-3
Maximum Service Temperature, Air	165 °C	329 °F	Continuous; ASTM D3045
	@Time 7.20e+7 sec	@Time 20000 hour	
	185 °C	365 °F	Continuous; ASTM D3045
	@Time 1.80e+7 sec	@Time 5000 hour	
Deflection Temperature at 0.46 MPa (66 psi)	301 °C	574 °F	Annealed; ASTM D648
	@Thickness 3.18 mm	@Thickness 0.125 in	
Deflection Temperature at 1.8 MPa (264 psi)	279 °C	534 °F	Unannealed; ISO 75-2/A
	287 °C	549 °F	
	@Thickness 3.18 mm	@Thickness 0.125 in	Annealed; ASTM D648
Flammability, UL94	HB	HB	UL 94
	@Thickness 3.18 mm	@Thickness 0.125 in	

Electrical Properties	Metric	English	Comments
Volume Resistivity	2.00e+15 ohm-cm	2.00e+15 ohm-cm	Conditioned; ASTM D257
	1.00e+16 ohm-cm	1.00e+16 ohm-cm	ASTM D257
Dielectric Constant	4.4	4.4	ASTM D150
	@Frequency 1.00e+6 Hz	@Frequency 1.00e+6 Hz	
	4.5	4.5	Conditioned; ASTM D150
	@Frequency 1.00e+6 Hz	@Frequency 1.00e+6 Hz	
	4.6	4.6	ASTM D150
	@Frequency 60.0 Hz	@Frequency 60.0 Hz	
	4.9	4.9	Conditioned; ASTM D150
	@Frequency 60.0 Hz	@Frequency 60.0 Hz	
Dielectric Strength	22.0 kV/mm	559 kV/in	Conditioned; ASTM D149
	22.0 kV/mm	559 kV/in	ASTM D149
Dissipation Factor	0.0050	0.0050	ASTM D150

Electrical Properties	@Frequency 60.0 Hz Metric	@Frequency 60.0 Hz English	Comments
	0.0090	0.0090	Conditioned; ASTM D150
	@Frequency 60.0 Hz	@Frequency 60.0 Hz	
	0.016	0.016	ASTM D150
	@Frequency 1.00e+6 Hz	@Frequency 1.00e+6 Hz	
	0.021	0.021	Conditioned; ASTM D150
	@Frequency 1.00e+6 Hz	@Frequency 1.00e+6 Hz	
Arc Resistance	125 sec	125 sec	Conditioned; ASTM D495
	145 sec	145 sec	ASTM D495
Comparative Tracking Index	550 V	550 V	UL 746
	550 V	550 V	Conditioned; UL 746

Processing Properties	Metric	English	Comments
Feed Temperature	79.4 °C	175 °F	Hopper Temperature
Rear Barrel Temperature	304 - 318 °C	579 - 604 °F	
Front Barrel Temperature	316 - 329 °C	601 - 624 °F	
Melt Temperature	321 - 343 °C	610 - 649 °F	
Mold Temperature	135 °C	275 °F	
Drying Temperature	121 °C	250 °F	
Dry Time	4.00 hour	4.00 hour	
Moisture Content	0.10 %	0.10 %	

Descriptive Properties	Value	Comments
Additive	Heat Stabilizer	
Appearance	Black	
	Natural Color	
Automotive Specifications	ASTM D4000 PA121 G45 Color: BK324 Black	
	ASTM D4000 PA121 G45 Color: NT Natural	
	ASTM D5336 PPA0120 G45 A06637 Color: BK324 Black	

Descriptive Properties	Value	Comments
	ASTM D6779 PA121G45	
	BOSCH N28 BN05-OX1 BN0510-GF45-3Anf10SO Color: NT Natural	
	BOSCH N28 BN05-OX1 BN0510-GF45-3Asw01SO Color: BK324 Black	
	DELPHI DCM4889 Color: BK324 Black	
	DELPHI DCM4889 Color: NT Natural	
	DELPHI M-6073 Color: BK324 Black	
	FORD WSK-M4D861-A2 Color: BK324 Black	

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