Amodel® AS-4145 HS

Polyphthalamide

Solvay Specialty Polymers

Message:

Amodel AS- 4145 HS polyphthalamide (PPA) is a hot water moldable 45% glass fiber reinforced resin. The main properties include high heat resistance, high strength and rigidity over a wide temperature range, low moisture absorption, excellent chemical resistance and excellent electrical properties. The resin is ideal for automotive electrical and electronic products, including connectors, sockets, switches and sensors. At the same time, it is also a good choice for shell materials such as anti-lock braking system, traction control system, steering system, engine electronic control, transmission and chassis control unit. Rapid crystallization rate and high fluidity can shorten the production cycle, thereby improving molding efficiency and reducing costs. -black: AS-4145 HS BK 324

General Information	
Filler / Reinforcement	Glass fiber reinforced material, 45% filler by weight
Additive	heat stabilizer
	Lubricant
	demoulding
Features	Good dimensional stability
	Low hygroscopicity
	Rigid, good
	High strength
	Fast molding cycle
	Good creep resistance
	Good chemical resistance
	Heat resistance, high
	Hot water formability
	Thermal Stability
	Lubrication
Uses	Lawn and Garden Equipment
	Valve/valve components
	Industrial components
	Industrial application
	Thick wall fittings (parts)
	Machine/mechanical parts
	Metal substitution
	Connector
	Parts under the hood of a car
	Automotive Electronics
	Application in Automobile Field
	General
	Shell

	Grind cleaning materials
RoHS Compliance	RoHS compliance
Appearance	Black
Forms	Particle
Processing Method	Water temperature mold injection molding
Multi-Point Data	Isothermal Stress vs. Strain (ISO 11403-1)
	Secant Modulus vs. Strain (ISO 11403-1)
	Viscosity vs. Shear Rate (ISO 11403-2)

Physical	Dry	Conditioned	Unit	Test Method
Density	1.55	--	g/cm³	ISO 1183/A
Molding Shrinkage				ASTM D955
Flow	0.50	--	%	ASTM D955
Transverse flow	1.0	--	%	ASTM D955
Water Absorption (24 hr)	0.21	--	%	ASTM D570
Mechanical	**Dry**	**Conditioned**	**Unit**	**Test Method**
Tensile Modulus				
--	15200	15200	MPa	ASTM D638
--	16100	--	MPa	ISO 527-2
Tensile Strength				
Fracture	228	186	MPa	ASTM D638
Fracture	224	--	MPa	ISO 527-2
Tensile Elongation				
Fracture	2.4	2.1	%	ASTM D638
Fracture	2.2	--	%	ISO 527-2
Flexural Modulus				
--	13100	13100	MPa	ASTM D790
--	13400	--	MPa	ISO 178
Flexural Stress				
--	327	--	MPa	ISO 178
Yield	328	269	MPa	ASTM D790
Compressive Strength	172	159	MPa	ASTM D695
Shear Strength	89.6	75.8	MPa	ASTM D732
Poisson's Ratio	0.40	--		ASTM E132
Impact	**Dry**	**Conditioned**	**Unit**	**Test Method**
Charpy Notched Impact Strength	10	--	kJ/m²	ISO 179/1eA
Charpy Unnotched Impact Strength	63	--	kJ/m²	ISO 179/1eU
Notched Izod Impact				
--	100	96	J/m	ASTM D256
--	10	--	kJ/m²	ISO 180/1A

Thermal	Dry	Conditioned	Unit	Test Method
Deflection Temperature Under Load				
0.45 MPa, annealed, 3.18mm	320	--	°C	ASTM D648
1.8 MPa, not annealed	298	--	°C	ISO 75-2/A
1.8 MPa, annealed, 3.18mm	300	--	°C	ASTM D648
Continuous Use Temperature [1]	210	--	°C	ASTM D3045
Melting Temperature	320	--	°C	ASTM D570, ISO 11357-3
Linear thermal expansion coefficient				ASTM E831
Flow: 0 to 90°C	1.6E-5	--	cm/cm/°C	ASTM E831
Flow: 149 to 249°C	1.3E-5	--	cm/cm/°C	ASTM E831
Lateral: 0 to 90°C	5.9E-5	--	cm/cm/°C	ASTM E831
Lateral: 149 to 249°C	1.1E-4	--	cm/cm/°C	ASTM E831
Electrical	**Dry**	**Conditioned**	**Unit**	**Test Method**
Volume Resistivity	8.0E+15	6.0E+14	ohms·cm	ASTM D257
Dielectric Strength (1.59 mm)	24	25	kV/mm	ASTM D149
Dielectric Constant				ASTM D150
60 Hz	4.00	4.90		ASTM D150
1 MHz	3.70	4.00		ASTM D150
Dissipation Factor				ASTM D150
60 Hz	4.0E-3	0.024		ASTM D150
1 MHz	0.011	0.037		ASTM D150
Comparative Tracking Index (CTI)	600	600	V	UL 746
High Voltage Arc Tracking Rate (HVTR)	13.0	14.0	mm/min	UL 746
Flammability	**Dry**	**Conditioned**	**Unit**	**Test Method**
Flame Rating [2] (3.18 mm)	HB	--		UL 94
Injection	**Dry**	**Unit**		
Drying Temperature	121		°C	
Drying Time	4.0		hr	
Suggested Max Moisture	0.10		%	
Hopper Temperature	79.4		°C	
Rear Temperature	318 - 324		°C	
Front Temperature	327 - 332		°C	
Processing (Melt) Temp	329 - 343		°C	
Mold Temperature	65.6 - 93.3		°C	
Injection instructions				

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.

NOTE	
1.	1200 hours
2.	These flammability ratings do not represent the risk of these materials or any other materials in actual fire situations.

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