

Akro-Plastic Akroloy® PA GF 50 (2706) PA 6.6 & PA6I/6T Dry, 50% Glass Filled

Category : Polymer , Thermoplastic , Nylon , Nylon 66 , Nylon 66, 50% Glass Fiber Filled

Material Notes:

One of the most characteristic properties of polyamide (PA 6.6) is the absorption of moisture. This essentially leads to increased toughness and elongation at break, to name the most important parameters. On the other side, there are important diminished design properties, such as rigidity, strength and creep modulus. It is also clear that the water molecules diffused into the polymer require a certain space, so that the dimensional stability suffers, as well. Applications that up to now have been manufactured of die-cast metals, usually involve extremely high demands on synthetic materials, running contrary to the above mentioned disadvantages. Even high levels of reinforcement in standard polyamides on the basis of PA 6 or PA 6.6 with, for example, 50 % or 60 % glass fibres, still exhibit drastic changes in mechanical characteristics. By blending of PA 6.6 with a partially aromatic CoPA (PA 6I/6T), it is possible to significantly reduce the influence of moisture on the product characteristics. While the drop in rigidity and strength of PA 6.6 GF 50 in a standard climate is still at approx. 25 %, a partially aromatic blend nevertheless exhibits a drop of less than 10 %. Furthermore, it becomes apparent that the toughness remains virtually unaffected. As a result of these findings, the swelling behaviour is improved, as well, which is favourable for dimensional stability. At the same time, this material mix also increases the glass transition temperature range. All in all, partly aromatic PA 6.6-Blends offer exactly the characteristics that are demanded by designers and users.

Processing: AKROLOY® PA is based on a semi-crystalline PA 6.6 and an amorphous CoPA. This essentially determines the processing conditions. Accordingly, the melting point of AKROLOY® PA is at approx. 255 °C and is not influenced by the CoPA. With increasing temperatures, the amorphous contents provide a disproportionately low viscosity. The result is a very good reproduction of mould surfaces and a mass temperature that is up to 30 °C lower than required by comparable products. This results, aside from high quality surface finishes, frequently in reductions of cycle times, as well. Owing to production conditions, this must be verified in each individual case. Overall, AKROLOY® PA represents a step towards energy savings, in particular, when energy costs are compared to those in metal production and processing. Due to increasing cost pressure in many industrial sectors, AKROLOY® PA will become a very interesting alternative material in the area of substitutes for metal diecasting. Aside from already mentioned advantages in the service life of the mould, the omission of post processing allows an average cost reduction of up to 50 % – and more. The following list comprises imaginable and suitable areas of application, grouped by segments.

Applications: Automotive Industry: Ignition key switch housing Door handle components door lock components Instrument panels (centre console) Arm rests Electric motor housings Wiper components Carriers for wood decor strips Seat sliding mechanisms, etc. Sanitary Installation: Single lever taps Water filter housings Housing for bath tap Chrome-plated shower heads, levels, etc. Construction: Window locks Door lock components Expanding nails for insulating plugs Corner connectors for lighting systems Shelving support elements, etc. Household: Handles Coffee maker components Juice extractor components Knives and handles Bottle openers Nutcrackers, etc. Electronic Industry: Mobile phone housings Plastic tongs Housings for measuring units Carrier plates, etc. Machine Building: Plastic screws Calipers Screw clamps, etc.

Information from Akro-Plastic

Order this product through the following link:

http://www.lookpolymers.com/polymer_Akro-Plastic-Akroloy-PA-GF-50-2706-PA-66-PA6I6T-Dry-50-Glass-Filled.php

Physical Properties	Metric	English	Comments
Density	1.59 g/cc	0.0574 lb/in³	ISO 1183
	@Temperature 23.0 °C	@Temperature 73.4 °F	
Filler Content	50 %	50 %	ISO 1172

Physical Properties	Metric	English	Comments
Water Absorption	@Temperature 70.0 °C	@Temperature 158 °F	62% r.h., Humidity, ISO 62
Water Absorption at Saturation	3.5 - 4.0 %	3.5 - 4.0 %	ISO 62
Viscosity	8000 cP	8000 cP	
	@Frequency 10000 Hz, Temperature 322 °C	@Frequency 10000 Hz, Temperature 612 °F	
	10000 cP	10000 cP	
	@Frequency 10000 Hz, Temperature 307 °C	@Frequency 10000 Hz, Temperature 585 °F	
	15000 cP	15000 cP	
	@Frequency 10000 Hz, Temperature 292 °C	@Frequency 10000 Hz, Temperature 558 °F	
	20000 cP	20000 cP	
	@Frequency 10000 Hz, Temperature 277 °C	@Frequency 10000 Hz, Temperature 531 °F	
	30000 cP	30000 cP	
	@Frequency 1000 Hz, Temperature 322 °C	@Frequency 1000 Hz, Temperature 612 °F	
	40000 cP	40000 cP	
	@Frequency 1000 Hz, Temperature 307 °C	@Frequency 1000 Hz, Temperature 585 °F	
	50000 cP	50000 cP	
	@Frequency 100 Hz, Temperature 277 °C	@Frequency 100 Hz, Temperature 531 °F	
	70000 cP	70000 cP	
	@Frequency 1000 Hz, Temperature 292 °C	@Frequency 1000 Hz, Temperature 558 °F	
	90000 cP	90000 cP	
	@Frequency 10.0 Hz, Temperature 277 °C	@Frequency 10.0 Hz, Temperature 531 °F	
	90000 cP	90000 cP	
	@Frequency 100 Hz, Temperature 322 °C	@Frequency 100 Hz, Temperature 612 °F	
	100000 cP	100000 cP	
	@Frequency 1000 Hz, Temperature 277 °C	@Frequency 1000 Hz, Temperature 531 °F	
	110000 cP	110000 cP	

Physical Properties	Metric	English	Comments
	@Frequency 10.0 Hz, Temperature 322 °C	@Frequency 10.0 Hz, Temperature 612 °F	
	120000 cP	120000 cP	
	@Frequency 100 Hz, Temperature 307 °C	@Frequency 100 Hz, Temperature 585 °F	
	130000 cP	130000 cP	
	@Frequency 10.0 Hz, Temperature 307 °C	@Frequency 10.0 Hz, Temperature 585 °F	
	135000 cP	135000 cP	
	@Frequency 100 Hz, Temperature 292 °C	@Frequency 100 Hz, Temperature 558 °F	
	160000 cP	160000 cP	
	@Frequency 10.0 Hz, Temperature 292 °C	@Frequency 10.0 Hz, Temperature 558 °F	
Linear Mold Shrinkage, Flow	<= 0.0030 cm/cm	<= 0.0030 in/in	ISO 294-4
Linear Mold Shrinkage, Transverse	0.0050 cm/cm	0.0050 in/in	ISO 294-4
Melt Flow	9.0 g/10 min	9.0 g/10 min	MVR; ISO 1133
	@Load 5.00 kg, Temperature 275 °C	@Load 11.0 lb, Temperature 527 °F	
Spiral Flow	536 cm	211 in	Akro

Mechanical Properties	Metric	English	Comments
Ball Indentation Hardness	290 MPa	42100 psi	H 961/30; ISO 2039-1
Tensile Strength at Break	250 MPa	36300 psi	5 [mm/min]; ISO 527-1/2
	125 MPa	18100 psi	
	@Temperature 140 - 150 °C, Time 1.80e+7 sec	@Temperature 284 - 302 °F, Time 5000 hour	5 [mm/min], 50% Loss of Tensile Strength; ICE 216
	125 MPa	18100 psi	
	@Temperature 140 - 150 °C, Time 7.20e+7 sec	@Temperature 284 - 302 °F, Time 20000 hour	5 [mm/min], 50% Loss of Tensile Strength; ICE 216
Tensile Stress	25.0 MPa	3630 psi	
	@Strain 0.500 %, Temperature 60.0 °C	@Strain 0.500 %, Temperature 140 °F	
	30.0 MPa	4350 psi	
	@Strain 0.500 %,	@Strain 0.500 %,	

Mechanical Properties	Temperature 23.0 °C Metric	Temperature 73.4 °F English	Comments
	80.0 MPa	11600 psi	
	@Strain 1.00 %, Temperature 120 °C	@Strain 1.00 %, Temperature 248 °F	
	100 MPa	14500 psi	
	@Strain 1.00 %, Temperature 80.0 °C	@Strain 1.00 %, Temperature 176 °F	
	100 MPa	14500 psi	
	@Strain 2.00 %, Temperature 120 °C	@Strain 2.00 %, Temperature 248 °F	
	120 MPa	17400 psi	
	@Strain 4.00 %, Temperature 120 °C	@Strain 4.00 %, Temperature 248 °F	
	125 MPa	18100 psi	
	@Strain 2.00 %, Temperature 80.0 °C	@Strain 2.00 %, Temperature 176 °F	
	130 MPa	18900 psi	
	@Strain 6.00 %, Temperature 120 °C	@Strain 6.00 %, Temperature 248 °F	
	135 MPa	19600 psi	
	@Strain 1.00 %, Temperature 60.0 °C	@Strain 1.00 %, Temperature 140 °F	
	135 MPa	19600 psi	
	@Strain 3.00 %, Temperature 80.0 °C	@Strain 3.00 %, Temperature 176 °F	
	140 MPa	20300 psi	
	@Strain 4.00 %, Temperature 80.0 °C	@Strain 4.00 %, Temperature 176 °F	
	145 MPa	21000 psi	
	@Strain 8.00 %, Temperature 120 °C	@Strain 8.00 %, Temperature 248 °F	
	160 MPa	23200 psi	
	@Strain 1.00 %, Temperature 23.0 °C	@Strain 1.00 %, Temperature 73.4 °F	
	180 MPa	26100 psi	
	@Strain 2.00 %, Temperature 60.0 °C	@Strain 2.00 %, Temperature 140 °F	
	195 MPa	28300 psi	

Mechanical Properties	Metric	English	Comments
	@Strain 3.00 %, Temperature 60.0 °C	@Strain 3.00 %, Temperature 140 °F	
	235 MPa	34100 psi	
	@Strain 2.00 %, Temperature 23.0 °C	@Strain 2.00 %, Temperature 73.4 °F	
Tensile Strength, Yield	140 MPa	20300 psi	
	@Temperature 80.0 °C	@Temperature 176 °F	
	255 MPa	37000 psi	
	@Temperature 23.0 °C	@Temperature 73.4 °F	
	265 MPa	38400 psi	
	@Temperature -20.0 °C	@Temperature -4.00 °F	
Elongation at Break	3.0 %	3.0 %	5 [mm/min]; ISO 527-1/2
Creep Strength	60.0 MPa	8700 psi	
	@Strain 0.700 %, Time 360000 sec	@Strain 0.700 %, Time 100 hour	
	60.0 MPa	8700 psi	
	@Time 360 sec, Strain 0.400 %	@Time 0.100 hour, Strain 0.400 %	
	60.0 MPa	8700 psi	
	@Strain 0.500 %, Time 3600 sec	@Strain 0.500 %, Time 1.00 hour	
	60.0 MPa	8700 psi	
	@Strain 0.600 %, Time 36000 sec	@Strain 0.600 %, Time 10.0 hour	
	90.0 MPa	13100 psi	
	@Strain 0.600 %, Time 36000 sec	@Strain 0.600 %, Time 10.0 hour	
	90.0 MPa	13100 psi	
	@Strain 0.650 %, Time 360000 sec	@Strain 0.650 %, Time 100 hour	
	90.0 MPa	13100 psi	
	@Time 360 sec, Strain 0.500 %	@Time 0.100 hour, Strain 0.500 %	
	90.0 MPa	13100 psi	
	@Strain 0.550 %, Time 3600 sec	@Strain 0.550 %, Time 1.00 hour	

Mechanical Properties	Metric	English	Comments
	@Strain 0.650 %, Time 3600 sec	@Strain 0.650 %, Time 1.00 hour	
	100 MPa	14500 psi	
	@Strain 0.700 %, Time 36000 sec	@Strain 0.700 %, Time 10.0 hour	
	100 MPa	14500 psi	
	@Strain 0.800 %, Time 360000 sec	@Strain 0.800 %, Time 100 hour	
	100 MPa	14500 psi	
	@Strain 0.880 %, Time 3.60e+6 sec	@Strain 0.880 %, Time 1000 hour	
Tensile Modulus	17.5 GPa	2540 ksi	1 [mm/min]; ISO 527-1/2
Flexural Strength	380 MPa	55100 psi	2 [mm/min]; ISO 178
Flexural Modulus	16.4 GPa	2380 ksi	2 [mm/min]; ISO 178
Charpy Impact Unnotched	9.50 J/cm ²	45.2 ft-lb/in ²	ISO 179/1eU
	@Temperature -30.0 °C	@Temperature -22.0 °F	
	11.0 J/cm ²	52.3 ft-lb/in ²	ISO 179/1eU
	@Temperature 23.0 °C	@Temperature 73.4 °F	

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