

## Omnia Plastica Omnidamid PA 6 - Akulon 6 - Dry

Category : Polymer , Thermoplastic , Nylon , Nylon 6 , Nylon 6 , Unreinforced

### Material Notes:

Semi-crystalline polymer of polyamide obtained by the polymerisation of the caprolactam. Its large popularity is due to both its good overall features as well as its cost-performance relationship. The use of a high viscosity polymer for the extrusion of Akulon 6 stock shapes results in a product with excellent mechanical properties and a very high standard of quality. Features: Abrasion resistance: even in dusty and demanding environments, it's one of the best engineering plastics. Toughness: high tensile stress and compressive strength. The shock resistance is good particularly for annealed material. Fatigue-proof: it maintains its features even under continuous stress. Self-lubricating: the friction coefficient is low and generally for sliding applications it does not require lubricators. Ageing resistance and weatherproof. Natural colour. Weak Point: It is hygroscopic; it absorbs moisture which means that in time both its mechanical features and dimensions will change. When dry, it is hard and fragile and when moist it becomes more shock resistant and yielding. Machining is easy but automatic lathes should be avoided as the swarf is extremely elastic. Application: Mechanical: thanks to its features and its low price it is a popular material for "general purposes". Widely used in the mechanical industry to produce gears, cams, pulleys, anti-wear guides and other mechanical parts. It is used also for guides, bearings and wheels in shipbuilding. For outdoor applications, Akulon GX is preferable due to its higher UV stability. Food contact: generally it is not used in contact with food. Electrical: usage in the electrical field is to be avoided as the electrical features change with the moisture content. Chemical: it is resistant to inorganic compounds and solvents. Information provided by Omnia Plastica s.p.a. for semifinished products such as sheet, rod, and tube.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Omnia-Plastica-Omnidamid-PA-6-Akulon-6-Dry.php](http://www.lookpolymers.com/polymer_Omnia-Plastica-Omnidamid-PA-6-Akulon-6-Dry.php)

Physical Properties	Metric	English	Comments
Density	1.14 g/cc	0.0412 lb/in <sup>3</sup>	ISO.1183 DIN.53479
Moisture Absorption at Equilibrium	2.8 %	2.8 %	50% relative humidity
Water Absorption at Saturation	9.0 %	9.0 %	23°C

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	85	85	dry sample; ISO2039.2
Ball Indentation Hardness	155 MPa	22500 psi	ISO2039.1 DIN.53456
Tensile Strength at Break	80.0 MPa	11600 psi	ISO.527 DIN.53455
Elongation at Break	60 %	60 %	ISO.527 DIN.53455
Tensile Modulus	3.00 GPa	435 ksi	ISO.527 DIN.53455
Compressive Strength	18.0 MPa	2610 psi	1% strain over 1000 hours; ISO.899 DIN.53444
Charpy Impact Unnotched	NB	NB	7.5 J; ISO.R179 DIN.53453
Charpy Impact, Notched	0.500 J/cm <sup>2</sup>	2.38 ft-lb/in <sup>2</sup>	ISO179/3C DIN.53453

Mechanical Properties	Metric	English	Comments
Coefficient of Friction, Dynamic	0.33		Hard steel; load =0.05MPa; speed =0.6 m/s

Thermal Properties	Metric	English	Comments
CTE, linear	90.0 $\mu\text{m}/\text{m}\cdot^{\circ}\text{C}$ @Temperature 23.0 - 60.0 $^{\circ}\text{C}$	50.0 $\mu\text{in}/\text{in}\cdot^{\circ}\text{F}$ @Temperature 73.4 - 140 $^{\circ}\text{F}$	
Thermal Conductivity	0.250 W/m-K	1.74 BTU-in/hr-ft <sup>2</sup> - $^{\circ}\text{F}$	DIN.52612
Melting Point	220 $^{\circ}\text{C}$	428 $^{\circ}\text{F}$	
Maximum Service Temperature, Air	88.0 $^{\circ}\text{C}$	190 $^{\circ}\text{F}$	Maximum operating temperature continuously for 5000 hours based on a tensile stress of 50% at 23 $^{\circ}\text{C}$ .
	150 $^{\circ}\text{C}$	302 $^{\circ}\text{F}$	short period, no load
Deflection Temperature at 1.8 MPa (264 psi)	83.0 $^{\circ}\text{C}$	181 $^{\circ}\text{F}$	ISO.75 DIN.53461
Minimum Service Temperature, Air	-40.0 $^{\circ}\text{C}$	-40.0 $^{\circ}\text{F}$	impact conditions and heavy loads not considered
Flammability, UL94	HB @Thickness 3.00 mm	HB @Thickness 0.118 in	
	V-2 @Thickness 6.00 mm	V-2 @Thickness 0.236 in	
Oxygen Index	24 %	24 %	ISO.4589

Electrical Properties	Metric	English	Comments
Volume Resistivity	1.00e+12 ohm-cm	1.00e+12 ohm-cm	ISO.93 DIN.53482
Dielectric Constant	3.6 @Frequency 1e+6 Hz	3.6 @Frequency 1e+6 Hz	ISO.250 DIN.53483
Dielectric Strength	25.0 kV/mm	635 kV/in	ISO.243 DIN.53481
Dissipation Factor	0.060 @Frequency 1e+6 Hz	0.060 @Frequency 1e+6 Hz	ISO.250 DIN.53483

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