

Polimersan Plastics POLIPA® (PA 6) Polyamide

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

Material Notes:

POLIPA® PA6 (POLYAMIDE) is produced by poly condensation of e-aminoacid and by the help of d-carbon acid and d-amine poly condensation. Its characteristics depend upon the numbers of the main structural key carbon atoms, which polyamide contains. Polyamide 66 contains six carbon atoms of d-amine (Hexamethylene d-amine) and six carbon atoms of d-carbonic acid (Adipinacid). This situation is valid also for polyamide 610, which is produced from hexamethylen d-amine and sabazine acid. Its composition has significant effect on polyamide properties. Especially, water absorption is mostly affected. As much as CH₂-group exists at each CONH-group, water absorption is that much low and dimension accuracy is that very good. (1% humidity absorption equals to 0,3% length elongation.) Parts which are requested to have dimension accuracy at humid atmosphere, are full only with 1.5% water and preferably are made of polyamide 11. (For comparison this value is 10% for PA6.) Polyamide is preferred as construction material at the conditions where exact measurements are required and which are mechanically loaded like gear wheel, rod, and bolt. Its mechanical properties are significantly dependent on its humidity quantity and degree of crystallization. It can be used also at higher temperatures because of its crystal structure and high melting point. But, when the temperature is higher than 100°C and when there is oxygen at the environment, damage occurs with oxidation. For this reason, for usage at atmosphere only stabilized ones are chosen. As a result, POLIPA, is a hard plastic due to its high molecular weight and its structure of crosswise bonds. It is resistant to twisting and corrosion. It has the property of working for a long time under load. But, due to its water absorption (9-10%), it is not recommended at humid environments.

CHARACTERISTICS OF POLIPA®: High Mechanical Resistance Hardness and stroke absorption characteristic Electrical Insulation Sliding and high corrosion resistance Resistance to chemicals

GENERAL USAGE AREAS OF POLIPA®: Items which are exposed to loads with strokes Gears Bobbins Vibration Sucking Elements Engineering and maintenance applications with general purpose. Information provided by Polimersan Polimer Kimya San.Tic.Ltd.Sti.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Polimersan-Plastics-POLIPA-PA-6-Polyamide.php

Physical Properties	Metric	English	Comments
Specific Gravity	1.13 g/cc	1.13 g/cc	ISO.1183 DN.53479
Water Absorption	9.0 - 10 %	9.0 - 10 %	ISO.62 DN.53495

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	85	85	ISO.2039-2
Hardness, Shore D	85	85	DN.53505
Ball Indentation Hardness	70.0 - 150 MPa	10200 - 21800 psi	ISO.2039-2
Tensile Strength at Break	80.0 MPa	11600 psi	ISO.527 DN.53455
Tensile Strength, Yield	60.0 - 70.0 MPa	8700 - 10200 psi	ISO.527 DN.53455
Elongation at Break	>= 50 %	>= 50 %	ISO.527 DN.53455

Modulus of Elasticity Mechanical Properties	3.00 GPa Metric	435 ksi English	ISO 178 DN.53452 Comments
Charpy Impact, Notched	0.400 - 2.50 J/cm ²	1.90 - 11.9 ft-lb/in ²	ISO.179 DN.53453

Thermal Properties	Metric	English	Comments
CTE, linear	60.0 - 100 µm/m-°C @Temperature 20.0 °C	33.3 - 55.6 µin/in-°F @Temperature 68.0 °F	DN.53752
Melting Point	220 °C	428 °F	
Maximum Service Temperature, Air	100 °C	212 °F	ISO.75 DN.53461

Electrical Properties	Metric	English	Comments
Volume Resistivity	>= 1.00e+16 ohm-cm	>= 1.00e+16 ohm-cm	ISO.167 DN.53482
Surface Resistance	>= 1.00e+13 ohm	>= 1.00e+13 ohm	ISO.167 DN.53482
Dielectric Strength	70.0 - 100 kV/mm	1780 - 2540 kV/in	ISO.243 DN.53481

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