

PA 4.6 (POLYAMIDE)

MATERIAL DATA SHEET

- High mechanical strength, stiffness, hardness and toughness
- Good fatigue resistance
- High mechanical damping ability
- Good sliding properties
- Excellent wear resistance
- Good electrical insulating properties
- Good resistance to high energy radiation (gamma- and X-rays)
- Good machinability

Compared with conventional nylons, PA 4.6 features a better retention of stiffness and creep resistance over a wide range of temperatures as well as superior heat aging resistance. Therefore, applications for PA 4.6 are situated in the "higher temperature area" (80 - 150°C) where stiffness, creep resistance, heat aging resistance, fatigue strength and wear resistance of PA 6, PA 66, POM and PET fall short.

PROPERTIES	Test methods	Units	VALUES
Colour	-	-	Reddish brown
Density	ISO 1183-1	g/cm ³	1.19
Water absorption:			
- after 24h immersion in water of 23°C	ISO 62	%	1.30
- at saturation in water of 23°C	-	%	9.5
Thermal Properties			
Melting temperature (DSC, 10°C/min)	ISO 11357-1/-3	°C	290
Thermal conductivity at 23°C	-	W/(K.m)	0.30
Coefficient of linear thermal expansion:			
- average value between 23 and 60°C	-	m/(m.K)	80x 10 ⁻⁶
- average value between 23 and 100°C	-	m/(m.K)	90x 10 ⁻⁶
Temperature of deflection under load:			
- method A: 1.8 MPa	ISO 75-1/-2	°C	160
Max. allowable service temp. in air continuously for 20000 h	-	°C	130
Min. service temperature	-	°C	-40
Flammability 3 mm thickness	UL 94	-	HB
Mechanical Properties at 23 °C			
Tension test:			
- tensile strength	ISO 527-1/-2	MPa	105
- tensile strain at yield	ISO 527-1/-2	%	18
- tensile strain at break	ISO 527-1/-2	%	25
- tensile modulus of elasticity	ISO 527-1/-2	MPa	3400
Compressive stress at 1/2/5 % nominal strain	ISO 604	MPa	31 / 60 / 102
Flexural strength	ISO 178	MPa	138
Flexural modulus of elasticity	ISO 178	MPa	3230
Charpy impact strength - Unnotched	ISO 179/1eU	kJ/m ²	No break
Charpy impact strength - Notched	ISO 179/1eA	kJ/m ²	8
Rockwell hardness	ISO 2039-2	-	M92
Electrical Properties at 23 °C			
Electric strength	IEC 60243-1	kV/mm	25
Volume resistivity	IEC 60093	Ohm.cm	>10 ¹⁴
Surface resistivity	IEC 60093	Ohm	>10 ¹³
Relative permittivity ε _r : - at 1MHz	IEC 60250	-	3.4
Dielectric dissipation factor tan δ: - at 1 MHz	IEC 60250	-	0.019

Note: 1 g/cm³ = 1,000 kg/m³; 1 MPa = 1 N/mm²; 1 kV/mm = 1 MV/m.

The information contained in this technical data sheet cannot be construed as a promise or guarantee of specific properties of our products. Any determination of the suitability of a particular material and part design for any use contemplated by the user is the sole responsibility of the user. The information contained in this technical data sheet is based on present knowledge and may be subject to change without further notice.