

## Technical Data Sheet

### Polyamide 6 (PA6) [Nylon 6]

Chemical Name(s): Polyamide 6, Nylon 6  
Common Abbreviation(s): PA6  
Available Profiles: Sheet, Rod

Nylon PA6 is a versatile engineering thermoplastic known for its high mechanical strength, toughness, and good chemical resistance. It is widely used in applications requiring high wear resistance, low friction, and resilience in challenging environments. PA6 also absorbs moisture, which can affect its mechanical properties.

#### Benefits:

- High mechanical strength and toughness
- Good wear and abrasion resistance
- Excellent impact resistance
- Low coefficient of friction
- Good chemical resistance, especially to oils and fuels
- Easy to machine and fabricate

#### Common Applications:

- Gears, bushings, and bearings
- Conveyor components
- Automotive parts
- Structural components
- Industrial machinery components
- Electrical insulators

#### TYPICAL PROPERTIES of POLYAMIDE 6 (PA6) [NYLON 6]

	Property	Test Method	Value
Physical Properties	Density (g/cm <sup>3</sup> )	ATSM D792	1.13
	Water Absorption (%)	ASTM D570	1.3
Mechanical Properties	Tensile Strength at 23°C (MPa)	ASTM D638	80
	Tensile Modulus (MPa)	ASTM D638	3000
	Tensile Elongation at Break (%)	ASTM D638	40
	Flexural Strength (MPa)	ASTM D790	115
	Flexural Modulus (MPa)	ASTM D790	2900
	Compressive Strength (MPa)	ASTM D695	80
	Hardness (Shore D)	ASTM D785	D80
Thermal Properties	Impact Strength (kJ/m <sup>2</sup> )	ASTM D256	7
	Coefficient of Linear Thermal Expansion (mm/mm/°C)	ASTM D696	8.0 x 10 <sup>-5</sup>
	Heat Deflection Temperature at 0.45 MPa (°C)	ASTM D648	90
	Approx. Melting Temperature (°C)	ASTM D3418	220
Electrical Properties	Max Operating Temperature (°C)	-	120
	Dielectric Strength (kV/mm)	ASTM D149	22
	Dielectric Constant at 1 MHz	ASTM D150	3.5
	Dissipation Factor at 1 kHz	ASTM D150	0.02
	Surface Resistivity (ohm/sq)	ASTM D257	>10 <sup>12</sup>
Flammability	Arc Resistance (sec)	ASTM D495	150-180
	Flammability Rating	UL94	HB
Standards Compliance	FDA compliant for food contact (specific grades) ASTM D638, D790, D695, D257 compliant ISO 1043 compliant for polyamide materials		
Environmental Considerations	Recyclability: Nylon PA6 is recyclable and commonly reused in many industrial applications. Environmental Impact: Nylon PA6 has moderate water absorption, which can affect its properties but is generally stable in a wide range of environments..		

