

Technical Data Sheet Polyamide 6

PA 6 natural

PA 6, Sustamid® 6, Ertalon® 6 SA, Nylatron®, Akulon®, Durethan®

Typical Properties

- Good toughness
- Good sound-damping properties
- Vibration-damping
- High abrasion resistance
- High mechanical strength
- Good impact strength
- Good weldability
- Good machinability
- Good sliding properties
- High moisture absorption, depending on temperature and humidity

Typical Industries

- Bakery and confectionery
- Meat, fish and poultry processing
- Mechanical and plant engineering
- Aerospace
- Food industry

	Test Method	Unit	Value
General Properties			
Density	DIN EN ISO 1183-1	g / cm ³	1.14
Moisture absorption	DIN EN ISO 62	%	3.0
Flammability (thickness 3 mm / 6 mm)	UL 94		HB / HB
Mechanical Properties			
Yield stress	DIN EN ISO 527	MPa	80
Elongation at break	DIN EN ISO 527	%	50
Tensile modulus	DIN EN ISO 527	MPa	3200
Notched impact strength	DIN EN ISO 179	kJ / m ²	3
Shore hardness	DIN EN ISO 868	scale D	82
Thermal Properties			
Melting temperature	ISO 11357-3	°C	220
Thermal conductivity	DIN 52612-1	W / (m * K)	0.23
Specific heat capacity	DIN 52612	kJ / (kg * K)	1.70
Coefficient of linear thermal expansion	DIN 53752	10 ⁻⁶ / K	90
Service temperature, long-term	Average	°C	-40 ... 85

	Test Method	Unit	Value
Service temperature, short-term (max.)	Average	°C	160
Heat deflection temperature	DIN EN ISO 75, method A, HDT	°C	75
Electrical Properties			
Dielectric constant	IEC 60250		3.9
Dielectric dissipation factor (50 Hz)	IEC 60250		0.02
Volume resistivity	DIN EN 62631-3-1	Ω * cm	10 ¹⁵
Surface resistivity	DIN EN 62631-3-2	Ω	10 ¹³
Comparative tracking index	IEC 60112		600
Dielectric strength	IEC 60243	kV / mm	20

Through moisture absorption, the mechanical properties of polyamides change: the material becomes tougher and more impact-resistant, and the modulus decreases. Depending on the ambient atmosphere, temperature and time of moisture absorption, however, only a certain surface layer is affected by these property changes. In thick-walled parts the core remains unchanged. The short-term maximum service temperature applies only to applications with very low mechanical load over a few hours. The long-term maximum service temperature is based on the thermal ageing of the plastics through oxidation, which results in a decrease of the mechanical properties. The temperatures stated are those which, after a period of at least 5,000 hours, cause a 50% decrease of the tensile strength (measured at room temperature) compared with the initial value. This value does not indicate the mechanical strength of the material at high application temperatures. In thick-walled parts, only the surface layer is affected by oxidation at high temperatures, which can be better protected by the addition of antioxidants. The core of the parts remains undamaged in any case. The minimum service temperature is largely determined by possible impact or shock loading in service. The values stated refer to low impact loading. The values stated are average values secured by continuous statistical testing. They comply with the requirements of DIN EN 15860. They serve only as information about our products and as an aid to material selection. We do not legally warrant any specific properties or suitability for a particular purpose. As the properties also depend on the dimensions of the semi-finished stock and the degree of crystallinity (e.g. nucleation by pigments), the actual property values of a specific product may deviate somewhat from the data.