

Technical Data Sheet Polyamide 6 – flame retardant (FR)

PA 6 FR natural

PA 6 FR, Sustamid® 6 FR – halogen- and phosphorus-free, certified to EN 45545-2

Typical Properties

- Halogen- and phosphorus-free
- Flame retardant
- Self-extinguishing
- High hardness
- High strength
- Good sliding properties
- Good abrasion and wear resistance
- Good machinability
- Good dimensional stability
- Certified to EN 45545-2

Typical Industries

- Railway technology and rail vehicles
- Automotive engineering
- Semiconductor industry
- Factory equipment

	Test Method	Unit	Value
General Properties			
Density	DIN EN ISO 1183-1	g / cm ³	1.17
Moisture absorption	DIN EN ISO 62	%	3.0
Flammability (thickness 3 mm / 6 mm)	UL 94		V0 / V0
Mechanical Properties			
Yield stress	DIN EN ISO 527	MPa	82
Elongation at break	DIN EN ISO 527	%	3
Tensile modulus	DIN EN ISO 527	MPa	3800
Shore hardness	DIN EN ISO 868	scale D	83
Thermal Properties			
Melting temperature	ISO 11357-3	°C	222
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	-20 ... 85
Service temperature, short-term (max.)	Average	°C	160
Heat deflection temperature	DIN EN ISO 75, method A, HDT	°C	65

	Test Method	Unit	Value
Electrical Properties			
Volume resistivity	DIN EN 62631-3-1	$\Omega \cdot \text{cm}$	10^{13}
Surface resistivity	DIN EN 62631-3-2	Ω	10^{16}

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.

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