

What is PA 6 G HS

PA 6 G HS natural

PA 6 G, heat-stabilised

PA 6 G HS is a cast polyamide 6 with a special heat stabilisation. The addition significantly increases thermo-oxidative resistance, while retaining the high stiffness and very good machinability of the PA6 G base material.

Properties

PA 6 G is a cast, semi-crystalline polyamide with high stiffness, good toughness, and good machinability. The heat stabilisation additionally improves resistance to thermo-oxidative ageing at elevated service temperatures, without significantly altering the basic mechanical properties of the PA6 G.

Like all polyamides, PA 6 G HS absorbs moisture from the environment; this makes the material tougher and more impact-resistant, while stiffness and dimensional stability decrease somewhat.

Advantages

- Heat-stabilised for increased thermo-oxidative resistance
- High stiffness of the PA6 G base material
- Very good machinability
- Improved long-term stability under thermal stress

Disadvantages

- Moisture absorption up to 2.5 % in standard atmosphere, causing dimensional and property changes
- Not resistant to strong acids and permanently hot water (hydrolysis)
- Not generally declared for food contact (see FDA declaration)

Processing

PA 6 G HS can be machined like standard PA6 G using all conventional cutting methods; HSS or carbide tools are sufficient. Good cooling via chip removal remains important to avoid softening or smearing of the surface caused by heat build-up.

For tight tolerances, we take swelling and shrinkage behaviour into account and condition the semi-finished product where required.

Typical Applications

PA 6 G HS is used wherever PA6 G must remain thermally stable over extended periods at elevated service temperatures, for example in mechanical engineering as well as crane and lifting technology.

- Components for elevated continuous service temperatures
- Bearing and guide elements
- Rollers and wheels in crane and lifting technology
- Components for conveyor technology

Typical Properties

- Heat-stabilised
- High rigidity
- Very good machinability

Product Examples

- Components for elevated temperatures
- Bearing and guide elements
- Rollers and wheels
- Conveyor technology components

Typical Industries

- Mechanical Engineering
- Crane and Lifting Technology
- Conveyor Technology

	Test Method	Unit	Value
General Properties			
Density	DIN EN ISO 1183-1	g / cm ³	1.15
Water absorption	DIN EN ISO 62	%	2.50
Flammability (Thickness 3 mm / 6 mm)	UL 94		HB / V2
Mechanical Properties			
Yield stress	DIN EN ISO 527	MPa	75
Elongation at break	DIN EN ISO 527	%	>15
Tensile modulus of elasticity	DIN EN ISO 527	MPa	3.700
Notched impact strength	DIN EN ISO 179	kJ / m ²	>2.5
Ball indentation hardness	DIN EN ISO 2039-1	MPa	170
Shore hardness	DIN EN ISO 868	scale D	82
Thermal Properties			
Melting temperature	ISO 11357-3	°C	216
Thermal conductivity	DIN 52612-1	W / (m·K)	0.25
Thermal capacity	DIN 52612	kJ / (kg·K)	1.70
Coefficient of linear thermal expansion	DIN 53752	10 ⁻⁶ / K	80
Service temperature, long term	Average	°C	-40 ... 120
Service temperature, short term (max.)	Average	°C	180
Heat deflection temperature	DIN EN ISO 75, Verf. A, HDT	°C	95