

What is PA 6 GC

PA 6 GC natural

PA 6, special compound GC

PA 6 GC is a special compound based on polyamide 6, processed so that its property profile approaches that of cast PA6 (PA6 G). Compared to standard PA6, PA 6 GC offers markedly higher heat deflection temperature, high wear resistance, and very good machinability.

Properties

PA 6 is a semi-crystalline engineering thermoplastic with high toughness, good abrasion and wear resistance, and good sliding properties. The special GC compound improves heat deflection temperature compared to standard PA6 and brings the property profile closer to cast PA6 (PA6 G).

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

Advantages

- Improved heat deflection temperature compared to standard PA6
- Property profile close to cast PA6 (PA6 G)
- High wear resistance
- Very good machinability

Disadvantages

- Moisture absorption up to 3 % 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 GC can be machined like standard PA6 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.

Because of moisture absorption and thermal expansion, we take swelling and shrinkage behaviour into account for tight tolerances and condition the semi-finished product where required.

Typical Applications

PA 6 GC is used wherever wear-resistant, mechanically loaded components with increased heat deflection temperature are required.

- Wear-resistant guide and sliding elements
- Components under increased thermal load
- Gears and mechanically stressed moulded parts
- Semi-finished products for close-tolerance machining

Typical Properties

- Modified compound with improved heat deflection temperature
- Good machinability

Product Examples

- Guide and sliding elements
- Wear parts
- Gears and moulded parts
- Components with increased heat deflection temperature

Typical Industries

- Mechanical Engineering
- Material Handling
- Electronics
- Construction
- Oil & Gas
- Wind Energy
- Vehicle Construction

	Test Method	Unit	Value
General Properties			
Density	DIN EN ISO 1183-1	g / cm ³	1.14
Water absorption	DIN EN ISO 62	%	3.00
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	%	>40
Tensile modulus of elasticity	DIN EN ISO 527	MPa	3.200
Notched impact strength	DIN EN ISO 179	kJ / m ²	>3.0
Ball indentation hardness	DIN EN ISO 2039-1	MPa	175
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
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 ... 95
Service temperature, short term (max.)	Average	°C	160
Heat deflection temperature	DIN EN ISO 75, Verf. A, HDT	°C	95