

What is Ertalon®

Ertalon®

Ertalon® 6 PLA – brand name for cast polyamide 6 (PA 6 G)

Ertalon® is a registered trade name for cast polyamide 6 (cast nylon, PA 6 G). Chemically it is the same polyamide 6 as extruded PA 6 – the key difference lies in the manufacturing process: Ertalon® is polymerised directly in the mould by anionic polymerisation, producing a more highly crystalline, lower-stress material with more uniform properties, especially in large cross-sections.

Classification and basic character

Ertalon® is the brand name for cast polyamide 6 (PA 6 G), a semi-crystalline engineering thermoplastic from the polyamide family. Like all PA 6 materials, Ertalon® is characterised by high toughness, good impact strength, high abrasion resistance and good sliding properties. The casting process gives the material higher crystallinity and lower internal stress than extruded PA 6, which is especially beneficial for thick-walled and large-format components.

How Ertalon® is manufactured and processed

Ertalon® is produced by anionic polymerisation of ϵ -caprolactam, with polymerisation taking place directly in the casting mould or semi-finished block – unlike extruded PA 6, which is extruded from the melt. This casting process allows the production of very large, thick-walled semi-finished products (sheets, round rods, tubes, special shapes) with uniform material quality across the entire cross-section and less warpage. The cast semi-finished products are then machined into precision parts.

Ertalon® versus extruded PA 6 – the difference

Since Ertalon® 6 PLA is chemically identical to PA 6 G, its technical values differ only gradually from extruded PA 6: the higher degree of crystallisation gives somewhat higher stiffness (tensile modulus approx. 3,400 MPa), higher hardness (Shore D 83) and better heat deflection temperature (95 °C) than extruded PA 6. The main practical advantage, however, is not primarily in the individual values but in the availability of very large, low-stress semi-finished products that could hardly be produced economically from extruded material at this size.

Mechanical, thermal and electrical properties

Ertalon® 6 PLA achieves a yield stress of around 75 MPa with a tensile modulus of around 3,400 MPa and a density of about 1.15 g/cm³. The melting temperature is around 216 °C, and the long-term service temperature is roughly -40 to +110 °C (up to 170 °C short-term). Electrically, the material is a good insulator (volume resistivity around 10¹⁵ Ω -cm), but it is not flame-retardant (UL 94 HB). Like all polyamides, Ertalon® absorbs noticeable moisture from its environment, which increases toughness, lowers stiffness and leads to dimensional changes.

When Ertalon® is the right choice

Ertalon® is worthwhile whenever the benefits of PA 6 are needed in large, thick-walled or low-stress components – for example:

- Large-format plain bearings, bushings and gears with large cross-sections
- Components where a low internal stress state is critical (dimensional stability, crack resistance)
- Large impact- and shock-loaded components in mechanical and plant engineering
- Applications in the oil and gas industry, wind power and conveying technology with large component dimensions
- Components for food processing (food-grade types available)

When Ertalon® is NOT the right choice

Equally important are the limits of the material:

- Highest dimensional stability under fluctuating humidity – POM is often the better choice here
- Continuous contact with hot water/steam or strong acids (hydrolysis/attack)
- Continuous use above approx. 110 °C or flame-retardancy requirements (only UL 94 HB)
- Applications with very high chemical or temperature requirements – then PVDF, PPS or PEEK
- Small standard parts, for which extruded PA 6 is more economical

What does Ertalon® cost?

Cast polyamide such as Ertalon® is priced higher than extruded PA 6, since the casting process is more elaborate and delivers larger, lower-stress semi-finished products. The component price is determined mainly by the shape and dimensions of the semi-finished product, material utilisation (offcuts), machining effort and batch size. We are happy to provide binding prices on request based on your drawing.

Machining at Liedtke

Ertalon® machines well – turning, milling, drilling and sawing produce clean results with good surface finish. Because of moisture absorption and thermal expansion, we account for swelling and shrinkage behaviour at tight tolerances and condition the semi-finished product if required. This allows us to reliably manufacture precision parts, including large-format components, from single items to series production.

Advantages and disadvantages at a glance

An honest assessment – and how the disadvantages can be mitigated in practice:

Advantages

- More highly crystalline, lower-stress material than extruded PA 6
- Available in very large, thick-walled semi-finished products
- Very high toughness and impact strength
- High abrasion and wear resistance, good sliding properties
- Machines and welds well

Disadvantages

- Absorbs moisture – dimensional and property changes
- Not resistant to strong acids and hot water (hydrolysis)
- Not flame-retardant (UL 94 HB), limited to approx. 110 °C continuous use
- Higher price than standard extruded PA 6

Practical tip: For smaller standard parts, extruded PA 6 is usually the more economical choice. For large-format, thick-walled or particularly low-stress components, Ertalon® delivers its advantages in full.

Typical Properties

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

Product Examples

- Large-format plain bearings and bushings
- Gears and pinions with large cross-sections
- Rollers and guide parts
- Components for the oil and gas industry
- Tower and nacelle components for wind turbines
- Components for food processing

Typical Industries

- Vehicle construction
- Oil and gas / subsea
- Conveying technology & automation
- Mechanical and plant engineering
- Construction industry
- Food industry
- Wind power (tower and nacelle components)

	Test Method	Unit	Value
Mechanical			
Yield stress	DIN EN ISO 527	MPa	75
Elongation at break	DIN EN ISO 527	%	45
Tensile modulus	DIN EN ISO 527	MPa	3400
Shore hardness	DIN EN ISO 868	scale D	83
Thermal			
Melting temperature	ISO 11357-3	°C	216
Service temperature	Average	°C	-40 ... 110
Heat deflection temperature	DIN EN ISO 75	°C	95
General			
Density	DIN EN ISO 1183-1	g / cm ³	1.15
Moisture absorption	DIN EN ISO 62	%	2.5
Flammability	UL 94		HB

Ertalon® is a registered trade name for cast polyamide 6 (cast nylon, PA 6 G). The values stated are typical averages and serve as an aid to material selection; they do not constitute a legally binding guarantee of specific properties. Moisture absorption changes the mechanical properties of polyamides; the values given apply to dry to conditioned material. Actual property values may deviate somewhat depending on the dimensions of the semi-finished product and the degree of crystallisation.