



## CAST NYLON: Polyamide (PAG)

Cast polyamide is a partially crystalline thermoplastic which is produced by means of anionic polymerisation of the raw material Caprolactam. In a pressureless casting process the liquid monomer is polymerised via a controlled chemical reaction directly to a semi-finished product or mould.

Standard quality for high wear demands on parts in machine and plant engineering. Colours: natural, black, blue

Mechanical Properties		
Density DIN53 479	g/cm <sup>3</sup>	1.15
Yield Stress DIN53 455	MPa	80 60
Elongation at break DIN53 455	%	40 100
Modules of elasticity resulting from <b>tensile</b> test DIN53 457	MPa	3,100 1,800
Modules of elasticity resulting from <b>bending</b> test DIN53 457	MPa	3,400 2,000
Flexural strength DIN53 452	MPa	140 60
Impact strength DIN53 453	KJ/m <sup>2</sup>	o. B.
Notched-bar impact strength DIN 53 453	KJ/m <sup>2</sup>	>4 >15
Ball indentation Hardness H <sub>358/30</sub> DIN53 456	MPa	160 125
Creep rate stress at 1% elongation DIN53 444	MPa	>7
Sliding friction coefficient against steel (dry running) <sup>3</sup>	-	0.36 0.42
Sliding wear against steel (dry running) <sup>3</sup>	µm/km	0.10
Thermal Properties		
Melting temperature DIN53 736	°C	+220
Thermal conductivity DIN52 612	W/(k m)	0.23
Specific thermal capacity	J/(g K)	1.7
Coefficient of linear expansion	10 <sup>-5</sup> - K <sup>-1</sup>	7-8
Operating temperature range (long-term)	°C	-40 +105
Operating temperature range (short-term)	°C	+170
Fire behaviour after UL 94 IEC 60695	-	HB
Electrical Properties		
Dielectric constant DIN53 483	-	3.7
Dielectric loss factor DIN53 483	-	0.03
Specific volume resistance DIN53 482	Ω-cm	10 <sup>15</sup> 10 <sup>12</sup>
Surface resistance DIN53 482	Ω	10 <sup>13</sup> 10 <sup>12</sup>
Dielectric strength DIN53 481	KV/mm	50 20
Creep resistance DIN53 480	-	KA3c KA3b
Miscellaneous data		
Moisture absorption in natural Rubber until saturated DIN53 715	W(H <sub>2</sub> O)%	2.2
Water absorption until saturated DIN53 495	W <sub>s</sub> %	6.5
Specific properties		hard, pressure and abrasion resistant, can be produced in large dimensions

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Due to its balanced mechanical properties and its excellent mechanical features this standard quality manufactured in a monomer casting process is the ideal construction material for a wide range of applications.

Cast Nylon offers compelling advantages compared to extruded polyamide 6 due to

- better mechanical strength
- lower moisture absorption
- better creep resistance
- better dimensional stability
- higher wear resistance



#### **Very good sliding properties mean**

that PA 6 G is the classical slider material for highly loaded machine components. Among these are bearing bushes, slider pads, guide pads as well as gears and sprockets. Because of the low coefficient of friction only an initial lubrication is generally needed. Often lubrication can be dispensed with altogether.

#### **High wear resistance at**

low and medium speeds, in particular under rough conditions (e.g. dust or sand contamination in the bearings) are further characteristics of PA 6 G as a sliding material for bearings. Contrary to conventional bearing materials such as cast iron, steel or bronze a much longer running life can be achieved under rough conditions.

#### **Good damping properties**

for the reduction of vibration and noise, particularly in the case of wire rope and conveyor rollers are of interest. PA 6 G reduces vibration which is transferred from metallic rollers to shafts, bearings and machine frames. In the same way, use of friction bearings of PA 6 G allows reduction of the vibration affecting the machine frame. This way the life of machines and their parts can be extended. Furthermore, a contribution is made to lowering machine noise.

#### **Good machining, dimensional stability, low residual stress**

allow production of complex engineered components and application in all design areas. Machining can be performed with standard tools and conventional machines for wood and metal working. High feed and cutting speeds promote cost-effective production.

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