



## Nylon 6 Polyamide

<b>Description</b>	
A crystalline material that is tough, resilient and creep resistant. Nylon 6 is made from Caprolactam and is used extensively in the fibre markets. Nylon 6 is very suitable injection moulding parts and can be extruded. It can be modified to increase rigidity and impact resistance.	
<b>Typical Applications</b>	
Bearings, washers, screw caps, conservatory roof parts, power tool housings, laser tags, connectors and strapping. Brush bristles.	
<b>Types of grade available</b>	
Impact modified Glass fibre and bead filled Flame retardant Mineral filled High viscosity (extrusion)	
<b>General Processing</b>	
Drying Time	4 to 6 hours
Drying Temperature	80C
Type of Drier	Hot Air
Purging	DYNAPURGE D2 OR F
Moisture Absorption	2%
Other Considerations	Mouldings will need conditioning to achieve full mechanical properties. The moisture needs to be absorbed either by boiling for 4 hrs in 60c water or leaving in humid environment for 6 - 8 weeks.
<b>Processing Injection Moulding</b>	
Barrel Settings	220C to 280C, filled grades run at higher temperatures
Injection speed	Fast, slower for reinforced grades to get smooth surface
Injection Pressure	Medium
Back Pressure	Low
Screw Speed	Medium
Tool Temperature	60C to 80C
Melt Temperature	193 - 195C
Processing Stability	Barrel residence time should not exceed 4 to 5 minutes

Gate Considerations	Submarine gates largely used for multi impression tools
Sprue & Runner Considerations	Runners should be full round
<b>Processing Extrusion</b>	
Barrel Settings	230 to 260C
Screw Speed	Polyolefin Screw with equal feed ,transition and metering section, 25-30 L/D or Nylon screw
Screen Packs	Recommended
Haul-off / Cooling	Bath 5 -10c
Calibration	Sizing plates
<b>Mechanical Properties</b>	
Shrinkages	0.2% to 1.6% depending on filler content
Flexural Strength	28 -130 MPa
Tensile strength at Yield	20 -95 MPa
<b>Physical Properties</b>	
Density	1.13 to 1.51
Cold Bend	-20
Cold Flex	N/A
Elongation at Break	75%
Flexural Modulus	0.1 -3.4 MPa
General Impact Strength	Medium to High
Material Finish	Dependant on filler content
<b>Thermal Properties</b>	
Vicat Softening Temperature	80 – 204c
Heat Deflection Temperature	65C at 1.85 MPA (based on standard unfilled PA6) 185C at 0.46MPa “ “ “ “ “
<b>Flammability</b>	
Flammability Rating	Flame retardant grades are available
<b>Weatherability</b>	
Suitability for outdoor use	Suitable for outdoor use when UV stabilised
<b>Fillers &amp; Additives</b>	
	Glass fibre, glass bead, minerals, heat stabilisers, impact modifiers, UV stabilisers
<b>Chemical Resistance</b>	
Resistant to	Alcohols, aromatic hydrocarbons, esters & ketones
Not resistant to	Acids, formic acid, sulphuric acid

<b>Food Contact Status</b>	Grades available
<b>Colouring</b>	Masterbatches are regularly used and are often preferred to dry colourants as their addition is relatively simple and clean. Surface dyeing is possible but, to achieve colour consistency and reproducibility, it is essential to critically control the percentage of dye concentration to the weight of nylon to be dyed.
<b>REACH &amp; ROHS Compliance</b>	Yes
<b>Bonding</b>	PA6 surfaces can be bonded together using a two component epoxy or cyanoacrylate adhesive, to ensure a more effective bond is achieved, the surfaces should be roughened prior to the adhesive being applied
<b>Welding</b>	PA6 components can be successfully welded using the ultrasonic technique

*This information has been provided as a general guide and we suggest that you carry out your own specific tests to be sure that this material is suitable for your application.*