

# Nylon

**Strong, stiff engineering plastic often used to replace metal bearings and bushings**



Nylon is a strong, stiff engineering plastic with outstanding bearing and wear properties. Nylon is frequently used to replace metal bearings and bushings often eliminating the need for external lubrication. Other benefits include a reduction in part weight, less operating noise, and decreased wear on mating parts.

## Nylon Material Options

Nylons are typically described according to numbers (6, 66, 11, 12, etc.) which relate to their molecular structures. Although there are many types of Nylon, the two most common available in sheet, rod, and tube are Nylon 6 and Nylon 6/6.

**Nylon 6 and Nylon 6/6** – have very similar mechanical, thermal, and electrical properties. Both are available in a variety of colors and formulations that are engineered to meet specific application requirements.

**Nylon 6** – is generally manufactured into sheet, rod, and tube via a liquid casting process. Casting is often the most cost effective method for producing large diameter rod, tube, and thick sheet. This process has the added advantage of allowing manufacturers to create custom near net (irregular) shapes. Near net shapes are useful in the construction of parts that would yield poorly from standard sheet, rod, or tube stock.

**Nylon 6/6** – sheet, rod, and tube are usually produced by melting solid pellets of the polymer and processing them through a thermoplastic extruder. Extrusion is a fast and economical method for making small diameter rod, tube, and thin sheet. Unlike cast Nylon 6 stock shapes, extruded Nylon 6/6 sheet, rod, and tubing can be manufactured to any length, which can be an advantage for cost effectively yielding finished parts.

**Nylon Grades** – Nylon is available in a variety of specialty formulas. Molybdenum disulphide-filled (MOS2) and oil-filled nylons have enhanced wear properties often eliminating the need for external lubrication. Heat stabilized nylon withstands higher operating temperatures and for enhanced strength and stiffness, nylon is available in glass-filled grades. FDA compliant grades of nylon are available for direct food contact.

**Nylon with Metal Core** – Nylon billets can be manufactured into many different components including gears, rollers, sprockets and augers. In power transmission applications, NYMETAL<sup>®</sup> billets combine the performance advantages of nylon and metal into one cohesive unit.

## Nylon is widely used for:

- Bearings and bushings
- Gears
- Wear pads
- Packaging machinery parts
- Food processing machinery parts
- Wheels
- Rollers
- Seals and gaskets

## Performance characteristics:

- Excellent bearing and wear properties
- Strong and stiff
- Good chemical resistance
- Easy to machine
- Easy to fabricate
- Reduced noise, weight, and wear of mating parts

## Common Brands:

- SUSTAMID<sup>®</sup>
- TECAMID<sup>®</sup>
- NYCAST<sup>®</sup>

## Available in:



## TYPICAL PROPERTIES OF NYLON

	UNITS	ASTM TEST	EXTRUDED NYLON 6/6	CAST NYLON 6	MD-FILLED CAST NYLON 6	OIL-FILLED CAST NYLON 6
Tensile strength	psi	D638	12,400	10,000 - 13,500	10,000 - 14,000	9,500 - 11,000
Flexural modulus	psi	D790	410,000	420,000 - 500,000	400,000 - 500,000	375,000 - 475,000
Izod impact (notched)	ft-lbs/in of notch	D256	1.2	0.7 - 0.9	-	1.4 - 1.8
Heat deflection temperature @ 264 psi	°F	D648	194	200 - 400	200 - 470	200 - 400
Maximum continuous service temperature in air	°F		210	230	-	230
Water absorption (immersion 24 hours)	%	D570	1.20	0.60 - 1.20	0.05 - 1.40	0.50 - 0.60
Coefficient of linear thermal expansion	in/in/°F $\times 10^{-5}$	D696	4.5	5.0	-	5.0
Light transmittance			0.28	0.22	0.30	0.12

Values may vary according to brand name. Please ask your Curbell Plastics representative for more specific information about an individual brand.