

PLASTICRAFT

TECHNICAL DATA SHEET

Nylon

(Polyamide)

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The exceptional bearing and wear properties of Nylon make it one of the most widely used plastics in the world. Nylon is frequently used as a replacement for bronze, brass, aluminum, steel and other metals, as well as other plastics, wood, and rubber. Nylon (Polyamide) is the generic name for all long-chain fiber-forming polyamides with recurring amide groups. Polyamides (Nylon) comprise the largest family of engineering plastics with a very wide range of applications. The family of nylons consists of several different types. Nylon 6/6, nylon 6, nylon 6/10, nylon 6/12, nylon 11, nylon 12, and nylon 6-6/6 copolymer are the most common. Of these, nylon 6/6 and nylon 6 dominate the market. Nylons offer extremely good wear resistance, coupled with high tensile strength and modulus of elasticity. They also have high impact resistance, a high heat distortion temperature, and resist wear, abrasion, and vibration. In addition, nylons can withstand sustained contact with a wide variety of chemicals, alkalis, dilute acids or oxidizing agents.

Another important factor both economically and mechanically, is the relative light weight of nylon. Nylon is approximately 1/8 the weight of bronze, 1/7 the weight of cast iron, and 1/2 the weight of aluminum. This reduces both the inertial and static loads and eases the handling of large components during maintenance or replacement procedures.

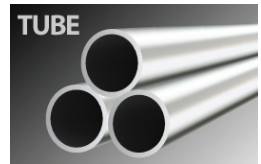
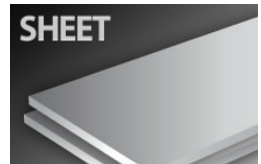
Benefits

- High tensile strength
- Light weight
- High modulus of elasticity
- High impact resistance
- Resistance wear, abrasion, and vibration
- Chemical resistance to alkalis, dilute acids or oxidizing agents
- Note- Nylon® is NOT moisture Resistant

Applications

- Electrical connectors
- Gear, slide, cams and bearings
- Automotive
- Sports & recreational equipment
- Bearings
- Rollers
- Wheels & wear components
- Semiconductor
- Medical
- Wear Pads
- Noels
- Bushings
- Seals

SHAPES AVAILABLE



SEE NEXT PAGE FOR ADDITIONAL INFORMATION

NOTE: The information contained herein are typical values intended for reference and comparison purposes only. They should NOT be used as a basis for design specifications or quality control. Contact us for manufacturers' complete material property datasheets. All values at 73°F (23°C) unless otherwise noted.

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TYPICAL PROPERTIES of EXTRUDED NYLONS				
ASTM or UL test	Property	Nylon 6/6 Unfilled	Nylatron GS Moly-Filled 6/6	Nylon 6/6 30% Glass
PHYSICAL				
D792	Density (lb/in ³) (g/cm ³)	0.042 1.15	0.042 1.16	0.049 1.35
D570	Water Absorption, 24 hrs (%) Saturation (%)	0.3 7.0	0.3 7.0	0.7 5.4
MECHANICAL				
D638	Tensile Strength (psi)	11,500	12,500	27,000
D638	Tensile Modulus (psi)	425,000	480,000	1,400,000
D638	Tensile Elongation at Break (%)	50	25	3
D790	Flexural Strength (psi)	15,000	17,000	39,000
D790	Flexural Modulus (psi)	450,000	460,000	1,200,000
D695	Compressive Strength (psi)	12,500	16,000	-
D695	Compressive Modulus (psi)	420,000	420,000	-
D785	Hardness, Rockwell R	M85 / R115	M85 / R115	M101
D256	IZOD Notched Impact (ft-lb/in)	0.6	0.5	2.1
THERMAL				
D696	Coefficient of Linear Thermal Expansion (x 10 ⁻⁵ in./in./°F)	5.5	4.0	1.2
D648	Heat Deflection Temp (°F / °C) at 264 psi	200 / 93	200 / 93	482 / 250
D3418	Melting Temperature (°F / °C)	500 / 260	500 / 260	491 / 255
-	Max Operating Temp (°F / °C)	210 / 99	220 / 104	230 / 110
C177	Thermal Conductivity (BTU-in/ft ² -hr-°F) (x 10 ⁻⁴ cal/cm-sec-°C)	1.7 5.9	1.7 5.9	1.7 5.9
UL94	Flammability Rating	V-2	V-2	HB
ELECTRICAL				
D149	Dielectric Strength (V/mil) short time, 1/8" thick	400	350	530
D150	Dielectric Constant at 60 Hz	3.6	-	3.5
D150	Dissipation Factor at 60 Hz	0.02	-	0.02
D257	Volume Resistivity (ohm-cm) at 73°F, 50% RH	> 10 ¹³	> 10 ¹³	10 ¹⁵

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TYPICAL PROPERTIES of CAST NYLONS						
ASTM or UL test	Property	Nylon 6 MC907,901 Unfilled	Nyloil Oil-Filled	Nylatron GSM Moly- Filled	Nylatron GSM Blue Moly & Oil	Nylatron NSM Solid- Lube
PHYSICAL						
D792	Density (lb/in ³) (g/cm ³)	0.042 1.15	0.042 1.16	0.042 1.16	0.042 1.15	0.042 1.15
D570	Water Absorption, 24 hrs (%) Saturation (%)	0.3 7.0	0.5 2.5	0.3 7.0	0.22 -	0.25 7.0
MECHANICAL						
D638	Tensile Strength (psi)	12,000	10,000	10,500	10,000	11,000
D638	Tensile Modulus (psi)	400,000	425,000	400,000	500,000	410,000
D638	Tensile Elongation at Break (%)	20	50	30	35	20
D790	Flexural Strength (psi)	16,000	15,000	16,000	15,000	16,000
D790	Flexural Modulus (psi)	500,000	425,000	400,000	425,000	400,000
D695	Compressive Strength (psi)	15,000	13,000	14,000	13,000	14,000
D695	Compressive Modulus (psi)	400,000	325,000	400,000	425,000	400,000
D785	Hardness, Rockwell R	R115	R110	R110	R117	R110
D256	IZOD Notched Impact (ft- lb/in)	0.4	1.6	0.5	0.9	0.5
THERMAL						
D696	Coefficient of Linear Thermal Expansion (x 10 ⁻⁵ in./in./°F)	3.5	3.5	3.5	5.9	5.0
D648	Heat Deflection Temp (°F / °C) at 264 psi	200 / 93	350 / 177	200 / 93	-	200 / 93
D3418	Melting Temperature (°F / °C)	420 / 215	450 / 232	420 / 215	420 / 215	420 / 215
-	Max Operating Temp (°F / °C)	200 / 93	230 / 110	200 / 93	200 / 93	200 / 93
C177	Thermal Conductivity (BTU-in/ft ² -hr-°F) (x 10 ⁻⁴ cal/cm-sec-°C)	-	-	-	-	-
UL94	Flammability Rating	HB	-	HB	-	HB
ELECTRICAL						
D149	Dielectric Strength (V/mil) short time, 1/8" thick	500	550	400	-	400
D150	Dielectric Constant at 60 Hz	3.7	3.7	3.7	-	-
D150	Dissipation Factor at 60 Hz	-	-	-	-	-
D257	Volume Resistivity (ohm- cm) at 73°F, 50% RH	> 10 ¹³	-	> 10 ¹³	> 10 ¹³	> 10 ¹³

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