Nylon® 6/6 (Polyamide) Extruded

Tough, wear resistant, and cost effective engineering thermoplastic than can be used in a variety of engineering applications

General Information

Chemical Designation:

PA (Polyamide)

Fillers:

Unfilled

Color:

White (Opaque) or Black

Specific Gravity:

1.15

Nylon 6/6 is the extrusion grade of the Nylon family of solid polymer shapes. It has been commercially available since 1948; developed by Dupont. Nylon is well known for excellent toughness, low coefficient of friction and good abrasion resistance making it an ideal replacement for a wide variety of materials from metal to rubber. Using Nylon 6/6 reduces lubrication requirements, eliminates galling, and corrosion. Low cost combined with improved wear resistance and strength makes Nylon 6/6 an excellent choice for many bearing and wear components.

Nylon 6/6 is easily fabricated into precision parts using standard metalworking equipment. Tolerances of +/-.002 are easily achieved with experience. It is available in a broad variety of shapes and sizes. Rod stock normally comes ground to size making turning easier.

Technical Information

Specification	Test	Value	Units
Specific Gravity, 73°F	D792	1.15	–
Tensile Strength @ Yield, 73°F	D638	12,000	psi
Tensile Modulus of Elasticity, 73°F	D638	425,000	psi
Tensile Elongation (at break), 73°F	D638	50	%
Flexural Strength, 73°F	D790	15,000	psi
Flexural Modulus of Elasticity	D790	450,000	psi
Shear Strength, 73°F	D732	10,000	psi
Compressive Strength – Ultimate		300	psi
Compressive Strength at 2% Deformation	D695	300	psi
Compressive Strength at 10% Deformation	D695	8,000	psi
Deformation Under Load			%
Compressive Modulus of Elasticity, 73°F	D695	420,000	
Compressive Strength ⊥ to Laminate (Modulus)			psi
Compressive Strength ⊥ to Laminate (Yield)		1,000	psi
Compressive Strength ⊥ to Laminate (Ultimate)		1,000	psi
Hardness, Durometer (Shore “D” scale)	D2240	D80	
Hardness, Rockwell (Scale as noted)	D785	115	Rockwell R
Izod Impact, Notched @ 73°F	D256 Type A	0.6	ft.lbs/in. of notch
Coefficient of Friction (Dry vs Steel) Static	PTM55007	0.3	
Coefficient of Friction (Dry vs Steel) Dynamic	PTM55007	0.25	
Maximum Static Bearing Load (P)	PTM55007	300	psi
Maximum Unlubricated No Load Bearing Velocity (V)	PTM55007	60	ft/minute
Maximum Limiting PV (Unlubricated)	PTM55007	2,700	psi x ft/min.
Wear Factor “K” x 10-10	PTM55010	80	Cubic in.-min/ft.lbs.hr
Sand Wheel Wear/Abrasion Test		75	UHMW=100
Minimum Mating Surface Hardness		20	Rockwell (Brinnell)
Coefficient of Linear Thermal Expansion	E-831(TMA)	5.50	in/in/°F x 10-5
Coefficient of Thermal Expansion // to Laminates	E-831(TMA)	5.50	in/in/°F x 10-5
Coefficient of Thermal Expansion l to Laminates	E-831(TMA)	5.50	in/in/°F x 10-5
Softening Point		200	°F
Heat Deflection Temperature 264 psi	D648	200	°F
Embrittlement Temperature			°F Min.
Continuous Service Temperature in Air		210	°F Max.
Short Term Service Temperature		210	°F Max.
Tg-Glass Transition (Amorphous)	D3418		°F
Melting Point (Crystalline) Peak	D3418	500	°F
Thermal Conductivity	F433	1.7	BTU-in/(hr/ft2°F)
Dielectric Strength Short Term	D149	400	Volts/mil
Surface Resistivity	D257	$>10^{13}$	ohm/cm
Volume Resistivity	D257		ohm/cm
Dielectric Constant, 106 Hz	D150	3.6	
Dissipation Factor, 106 Hz	D150	0.02	
Flammability @ 3.1mm(1/8 in.) UL94	UL94	V-2	
Arc Resistance			seconds
Water Absorption, Immersion 24 Hours	D570 (2)	0.3	%
Water Absorption, Immersion Saturation	D570 (2)	7.0	%
Machinability Rating		2	1=easy, 10=difficult
Rod Diameter Availability (Off the Shelf)	.25	6.0	inches
Sheet Thickness Availability (Off the Shelf)	.125	3.0	inches
Characteristics / Attributes	Excellent Toughness / Easily Machined / Low Cost		