



## EPP Nylon PA66, Unfilled, extruded (ASTM Data)

**Categories:** Polymer; Thermoplastic; Nylon; Nylon 66; Nylon 66, Extruded

**Material Notes:** Nylon is an extruded form of polyamide, offering rigidity, strength, wear resistance, and heat resistance to 210°F. It is commonly used in both structural and general-purpose bearing and wear applications. This material is available in natural and black. The natural material is compliant with FDA, USDA, NSF, and 3A-Dairy regulations.

**Key Words:** Polyamide 66; PA66; PA 66; Polyamide 6/6; Polyamide 6,6; Nylon 6/6; Nylon 6,6

Physical Properties	Metric	English	Comments
Specific Gravity	1.15 g/cc	1.15 g/cc	ASTM D792
Water Absorption	0.30 %	0.30 %	Immersion, 24hr; ASTM D570(2)
Water Absorption at Saturation	7.0 %	7.0 %	Immersion; ASTM D570(2)
Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	85	85	ASTM D785
Hardness, Rockwell R	115	115	ASTM D785
Hardness, Shore D	80	80	ASTM D2240
Tensile Strength	82.7 MPa	12000 psi	ASTM D638
Elongation at Break	50 %	50 %	ASTM D638
Tensile Modulus	2.93 GPa	425 ksi	ASTM D638
Flexural Yield Strength	103 MPa	15000 psi	ASTM D790
Flexural Modulus	3.10 GPa	450 ksi	ASTM D790
Compressive Strength	86.2 MPa	12500 psi	10% Def.; ASTM D695
Compressive Modulus	2.90 GPa	420 ksi	ASTM D695
Shear Strength	68.9 MPa	10000 psi	ASTM D732
Izod Impact, Notched	0.320 J/cm	0.600 ft-lb/in	ASTM D256 Type A
Coefficient of Friction	0.25	0.25	Dry vs. Steel; QTM55007
K (wear) Factor	161 x 10 <sup>-8</sup> mm <sup>3</sup> /N-M	80.0 x 10 <sup>-10</sup> in <sup>3</sup> -min/ft-lb-hr	QTM 55010
Limiting Pressure Velocity	0.0946 MPa-m/sec	2700 psi-ft/min	4:1 safety factor; QTM 55007
Electrical Properties	Metric	English	Comments
Surface Resistivity per Square	>= 1.00e+13 ohm	>= 1.00e+13 ohm	EOS/ESD S11.11
Dielectric Constant	3.6 @Frequency 1e+6 Hz	3.6 @Frequency 1e+6 Hz	ASTM D150
Dielectric Strength	15.7 kV/mm	400 kV/in	Short Term; ASTM D149
Dissipation Factor	0.020 @Frequency 1e+6 Hz	0.020 @Frequency 1e+6 Hz	ASTM D150
Thermal Properties	Metric	English	Comments
CTE, linear	99.0 µm/m-°C @Temperature -40.0 - 149 °C	55.0 µin/in-°F @Temperature -40.0 - 300 °F	ASTM E831
Thermal Conductivity	0.245 W/m-K	1.70 BTU-in/hr-ft <sup>2</sup> -°F	ASTM F433
Melting Point	260 °C	500 °F	Crystalline, Peak; ASTM D3418
Maximum Service Temperature, Air	98.9 °C	210 °F	Long Term
Deflection Temperature at 1.8 MPa (264 psi)	93.3 °C	200 °F	ASTM D648
Flammability, UL94	V-2	V-2	1/8 inch (Estimated Rating)
Compliance Properties	Metric	English	Comments
3A-Dairy	Yes	Yes	
Canada AG	No	No	
FDA	Yes	Yes	Natural Only
NSF	Yes	Yes	STD 61, Natural Only
USDA	Yes	Yes	
USP Class VI	No	No	
Chemical Resistance Properties	Metric	English	Comments
Acids, Strong (pH 1-3)	Unacceptable	Unacceptable	
Acids, Weak	Limited	Limited	
Alcohols	Limited	Limited	
Alkalies, Strong (pH 11-14)	Unacceptable	Unacceptable	

Alkalies, Weak	Limited	Limited
Chlorinated Solvents	Limited	Limited
Conductive / Static Dissipative	No	No
Continuous Sunlight	Limited	Limited
Hot Water / Steam	Limited	Limited
Hydrocarbons - Aliphatic	Acceptable	Acceptable
Hydrocarbons - Aromatic	Acceptable	Acceptable
Inorganic Salt Solutions	Acceptable	Acceptable
Ketones, Esters	Acceptable	Acceptable

**Descriptive Properties**

Color	Natural
Machinability	1 <span style="float: right;">1-10, 1=Easier to Machine</span>