

ENGINEERING POLYMERS (machined components)

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Property	Units	Test Method	UNFILLED PEEK	NYLOCROSS 2001	NYLON 66	U.H.M.W.P.E.	DELTRIN	P.E.T.P
Description	---	---	Semi-crystalline thermoplastic	Lubricant Filled Nylon	General Purpose Polyamide	High Density Polyethylene	Polyacetal	Thermoplastic Polyester
Colour	---	---	Grey	Dark Blue	White	Translucent White	White	Off White
Specific Gravity	g/cm ³	ASTM D1457	1.32	1.14	1.14	0.95	1.42	1.39
Hardness	Shore 'D'	ASTM D2240	88	85	85	67	85	87
Tensile Strength	MPa	ASTM D638	100	79	81	46	70	80
Compressive Strength	MPa	ASTM D695	118	93	86	18	110	103
Flexural Strength	MPa	ISO R178	170	124	90	45	69	124
Impact Strength (Izod notch)	Jm ⁻¹	ISO R180A	83	105	68	No Break	100	35
Poissons Ratio	MPa	ASTM D638	0.4	0.42	0.35	---	0.24	0.42
Melting Point (peak of melting endotherm)	°C	DSC	340	225	260	138	175	254
Coefficient of Thermal Expansion (30°C to 260°C)	mm/mm/°C	ASTM D2240	4.7 x 10 ⁻⁵	9.0 x 10 ⁻⁵	10.0 x 10 ⁻⁵	20.0 x 10 ⁻⁵	11.0 x 10 ⁻⁵	8.0 x 10 ⁻⁵
Thermal Conductivity	W/m.K	Cenco Fitch	0.25	0.29	0.24	0.42	0.24	0.2
UL continuous use temp. (estimated)	°C	UL746B	250	104	90	70	105	170
Heat Distortion Temperature (@ 1.82MPa)	°C	ISO R75	160	93	60	N/A	125	80
Coefficient of Friction (Dry) Dynamic, 0.2 MPa@15m/min	---	BCL Method	0.25	0.12	0.16	0.13	0.11	0.15
Water Absorption	%	ASTM D570	0.5	0.75	1.5	Nil	0.25	0.1
ADVANTAGES (related to filler)			Very high heat resistance, rigidity & hardness. Good strength and electrical characteristics. Excellent sliding friction, chemical resistance & hydrolytic stability. High radiation resistance. FDA compliant material.	Self lubricating, High wear & abrasion resistance, High impact and mechanical strength, Low density, non-porous. Lower frictional coefficient than conventional nylons.	Excellent load bearing ability, wear and creep resistant. Higher melting point than standard nylon 6 and lower water absorption make it suited close tolerance components. Good mechanical damping.	Very low wear and friction. Excellent abrasion resistance and mechanical strength especially creep resistance. Excellent wear performance in water and heat conditions. Meets FDA requirements.	Excellent balance of mechanical properties with high toughness, stiffness & impact resistance. Low wear and friction and good UV resistance and fatigue resistance. Very good resilience.	High mechanical strength, stiffness & hardness. Low friction and creep. Very good dimensional stability and strain resistance. Good gas barrier properties. Good electrical insulator & resistant to high energy radiation. Suitable for food contact.
RECOMMENDED / SUGGESTED APPLICATIONS			Food contact applications, bearings for machine and apparatus construction industry. Parts that are subjected to severe stress. Hot water and continuous steam contact applications.	Most bearing types, seals, plant machinery parts, gears, valve seats, water treatment, food processing equipment, textile machinery.	Suitable for most general purpose applications that need low wear and higher load bearing ability than standard nylon machined components. Cams, star wheels, support wheels, pulleys, scrapers.	Rollers, gears, valve seats, gaskets, bearings, slide bearings, lip seals, food contact and pharmaceutical equipment. Bottling industry, grain and fertilizer handling. Highly used in medical applications	Good performer in most applications that require high fatigue resistance. Gears, conveyor bearings, snapfit, impellers. Ideal for small diameter, thin walled bushing that require additional strength and rigidity.	Heavily loaded bearings, gears, rollers, electrical components, pumps, precision components, thrust washers, bushes, guides, slideways.