

# Hi-Q Components

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While the descriptions and information contained below are presented in good faith and believed to be accurate it is provided for guidance only. Because many factors affect application and use we recommend that you make tests to determine the suitability of a product for your particular purpose prior to use.

## Nylon 6/6 Polyamide

General purpose nylon 6/6 has good toughness, tensile strength and resistance to creep, particularly in the high temperature range. Nylon has excellent wear properties, low coefficient of friction and exceptional chemical resistance particularly to aromatic hydrocarbons, greases and oils. Nylon is a hygroscopic material. Moisture acts as a plasticizer reducing the tensile strength/ stiffness and increasing elongation/ impact strength/ energy absorbing characteristics. Outdoor weathering can be improved by the addition of carbon black. Nylon will perform well in long range service in most applications at temperatures as high as 85° C. The natural colour is translucent off white.

## Nylon 6/6 Heat Stabilized

Nylon heat stabilized has the same mechanical properties as general purpose nylon 6/6 with the additional advantage of heat stabilization. This material will withstand 121 °C in long range service in most applications. Most stock items are black.

## Nylon 6/6 Flame Retardant

Flame retardant nylon 6/6 has similar properties to general purpose nylon 6/6 with flame retardant additives for UL94V0 rating.

## Nylon 6/6 30% Glass Reinforced

Nylon 6/6 33% glass reinforced has outstanding property improvements over un-reinforced compositions. Improvements include greater tensile strength, deflection temperature, shear strength, improved creep resistance, better dimensional stability, lower moisture absorption and thermal expansion. The good wear resistance, electrical properties and low coefficient of friction of un-reinforced nylon 6/6 are retained. Nylon 33% glass reinforced is opaque tan in colour.

## Nylon 46 Polyamide

Nylon 46 is a high temperature nylon which bridges the price performance gap between traditional nylons and high performance materials. It has excellent short and long term heat resistance, high stiffness at elevated temperatures, high creep resistance, outstanding toughness, excellent fatigue behaviour, good chemical resistance and higher continuous use temperature. Nylon 46 is translucent off white in colour.

## Acetal Copolymer (POM)

Acetal resins have strength, stiffness and hardness over a wide range of temperatures, humidity environments and stress. Acetal absorbs little water minimising the effect of moisture on its physical properties. Acetal resists neutral oils, grease, petroleum based fuels, many organic solvents and alkalis. Oxidizing agents and acids, organic and inorganic, with a PH less than 4 will attack acetals. Acetal is widely used in plumbing and irrigation because it resists scale build-up and has excellent thread strength.

## High Density Polyethylene (HDPE)

Polyethylene is among the lowest density plastics and therefore is one of the lowest cost per volume. High density polyethylene has good toughness, excellent electrical properties and chemical resistance, good low temperature brittleness and very low water absorption. Polyethylene is essentially inert, unaffected by strong and weak acids, alkalis, detergents, alcohols and ketones. Polyethylene has low tensile strength and is subject to considerable creep and stress relaxation under load. Polyethylene will swell with chlorinated and aromatic hydrocarbons including gasoline and oils.

## Polycarbonate (PC)

Polycarbonate is one of the toughest, most dimensionally stable thermoplastics over a wide temperature range. Polycarbonate has exceptionally high impact strength. It is unaffected by water below 60° C and can be used in boiling water on a limited basis. It is unaffected by greases, oils, detergents, aliphatic hydrocarbons, most mineral acids and the higher alcohols. It is attacked by chlorinated hydrocarbons and most aromatic solvents, esters and ketones. Polycarbonate has white water transparency with a 90% light transmission.

## Polypropylene (PP)

Polypropylene has a good combination of rigidity and toughness at elevated temperatures, can be steam sterilized, good abrasion resistance and low coefficient of friction, non-hygroscopic, excellent electrical properties, unique flex properties, good chemical resistance without stress cracking, PP has one of the lowest densities and a high surface gloss. It has excellent chemical resistance to dilute acids, concentrated acids (except oxidising acids) alkalis, alcohols and detergents. PP resists aromatic hydrocarbons, chlorinated hydrocarbons, greases and oils at room temperature but it is attacked at about 60° C.

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## Raw Materials

Mechanical Property	psi	ASTM Test	Unit	Nylon 6/6	Nylon 6/6 Flame Retarded	Nylon 6/6 Glass Filled	Acetal Copoly mer	PVC	Polycarbonate	Polyethylene	Polypropylene
Tensile		D638	psi	12,000	11,600	28,000	8,800	6,200	10,300	3,200	4,700
Flexural		D790	psi	410,00	520,000	1,300,00	375,000	350,000	350,000	120,000	210,000
Izod Impact		D756	ft lbs/in	1	1.5	2.2	1.3	17.0	16	5	0.6
Deflection Temp.	66	D648	°C	221	224	257	158	137	135		104
	26	D648	°C	71	91	252	110	129	127		49
Dielectric		D149	Volts/mi	400	00	400	500	690	420		425
Volume		D257	ohm/cm	10 <sup>14</sup>	10 <sup>15</sup>	10 <sup>14</sup>	10 <sup>14</sup>		2x10 <sup>17</sup>		-
Water		D570	% 24	1.5	2.6	1	0.22		0.15		0.3
Flammability		BUL94		94V2	94V0	94HB	94HB	94VO	94V2		-
Melting Point		D789	°C	260	243	263	165		154		160

## Nylon Machine Screws

Size	Ultimate Torque	Before Deformation	Tensile Test Max. Torque		Double Shear	
			Yield	Break	Yield	Break
M2 X 0.4	No Test	No Test	7 N.	N/B	116 N.	89 N.
M2.5 X 0.45	No Test	No Test	9 N.	N/B	169 N.	156 N.
M3 X 0.5	.32 Nm.	.20 - .26 Nm.	22 N.	N/B	329 N.	294 N.
M3.5 X 0.6	.43 Nm.	.28 - .34 Nm.	53 N.	N/B	405 N.	378 N.
M4 X 0.7	.45 Nm.	.36 - .43 Nm.	214 N.	N/B	636 N.	600 N.
M5 X 0.8	.93 Nm.	.73 - .79 Nm.	271 N.	N/B	1134 N.	1081 N.
M6 X 1.0	1.83 Nm.	1.41 - 1.47Nm.	845 N.	912 N.	1877 N.	1806 N.
M8 X 1.25	3.39 Nm.	2.45 - 2.82Nm.	1.677 N.	1744 N.	3034 N.	2980 N.
M10 X 1.50	5.31 Nm.	4.52 - 4.86Nm.	2749 N.	N/B	5280 N.	5026 N.

## Nylon Hex Nuts

Size	Tensile	Ultimate Torque
M2	No Test	No Test
M2.5	135.23 N	No Test
M3	142.34 N	No Test
M3.5	369.20 N	2.3 cm/Kg
M4	451.94 N	4.5 cm/Kg
M5	940.35 N	8.3 cm/Kg
M6	1556.65 N	17.6 cm/Kg
M8	2597.76 N	56.2 cm/Kg
M10	6283.11 N	89.9 cm/Kg

All product descriptions and specifications are subject to change without notice.