

# Property Comparison

Product Description	Units	Test Method ASTM	Unfilled Type 6/6 Nylon	Nylatron GS Nylon	Unfilled Polycarbonate	High Impact Polystyrene	ABS
<b>MECHANICAL</b>							
Specific Gravity 73°F.	–	D7592	1.15	1.16	1.20	1.04	1.05
Tensile Strength (at break), 73°F.	psi	D638	11,500	12,500	10,000	3,500	10,000
Tensile Modulus of Elasticity 73°F.	psi	D638	425,000	480,000	315,000	270,000	325,000
Tensile Elongation (at break) 73°F.	%	D638	50	25	135	45	2
Flexural Strength, 73°F.	psi	D790	15,000	17,000	14,200	7,000	9,500
Flexural Modulus of Elasticity, 73°F.	psi	D790	450,000	460,000	340,000	310,000	315,000
Shear Strength, 73°F.	psi	D732	10,000	10,500	6,000	3,000	7,700
Compressive Strength, 10% Deformation, 73°F.	psi	D695	12,500	16,000	12,500	6,400	16,000
Compressive Modulus of Elasticity, 73°F.	psi	D695	420,000	420,000	345,000	270,000	410,000
Hardness, Rockwell, Scale as noted, 73°F.	–	D785	M85 (R115)	M85 (R115)	M70	M65 (R95)	M80
Izod Impact (notched), 73°F.	ft.lb./in. of notch	D256 Type "A"	0.6	0.5	17.0	2.0	1.5
Coefficient of Friction (Dry vs. Steel) Dynamic	–	D1894	0.25	0.20	–	0.40	0.15
<b>THERMAL</b>							
Coefficient of Linear Thermal Expansion (-40°F to 300°F.)	in./in./°F	D696	5.5x10-5	4.7x10-5	3.8x10-5	4.5x105	5.0x10
Heat Deflection Temperature 264 psi	°F	D648	200	200	265	200	165
Melting Point (crystalline) peak	°F	D3418	500	500	N/A	270	430
Continuous Service Temperature in Air (Max.) (1)	°F	–	210	220	225	125	140
Thermal Conductivity	BTU in./(hr. Ft <sup>2</sup> °F)	–	1.7	1.7	1.3	1.0	1.0
<b>ELECTRICAL</b>							
Dielectric Strength, Short Term	Volts/mil	D149	400	350	380	550	380
Volume Resistivity	ohm-cm	D257	4.5x10 <sup>13</sup>	2.5x10 <sup>13</sup>	1.0x10 <sup>17</sup>	1.0x10 <sup>16</sup>	.15x18
Dielectric Constant, 106 Hz	–	D150	3.6	–	2.96	2.5	2.41
Dissipation Factor, 106 Hz	–	D150	0.02	–	0.010	0.0005	.003
Flammability @ 3.1 mm(1/8 in.) (5)	–	UL 94	V-2	V-2	V-2	94 HB	94 HB
<b>CHEMICAL(3)</b>							
Water Absorption Immersion 24 Hours	% by wt.	D570 (2)	0.3	0.3	0.15	0.00	0
Water Absorption Immersion, Saturation	% by wt.	D570 (2)	7.0	7.0	0.35	0.00	0
Acids, Weak, 73°F., acetic acid dilute hydrochloric or sulfuric acid	–	–	L	L	A	A	L
Acids, Strong, 73°F., conc. hydrochloric or sulfuric acid	–	–	U	U	A	A	U
Alkalis, Weak, 73°F., dilute ammonia or sodium hydroxide	–	–	L	L	A	L	L
Alkalis, Weak, 73°F., strong ammonia or sodium hydroxide	–	–	U	U	U	L	L
Hydrocarbons-Aromatic, 73°F., benzene, toluene	–	–	A	A	U	U	U
Hydrocarbons-Aliphatic, 73°F., gasoline hexane grease	–	–	A	A	A	U	U
Ketones, Esters 73°F., acetone methyl ethyl ketone	–	–	A	A	U	U	U
Ethers 73°F., diethyl ether tetrahydrofuran	–	–	A	A	A	U	U
Chlorinated Solvents 73°F., methylene chloride, chloroform	–	–	A	A	U	U	U
Alcohols, 73°F., methanol, ethynol, anti-freeze	–	–	A	A	A	A	L
Inorganic Salt Solutions, 73°F., sodium chloride, potassium cyanate	–	–	A	A	A	A	A
Continuous Sunlight 73°F.	–	–	L	L	L	U	U
<b>OTHER</b>							
Relative Cost (4)	–	–	\$\$	\$\$	\$\$\$	\$	\$
Relative Machinability (1-10, 1=Easier to Machine)	–	–	1	1	3	3	2

(1) Data represents estimated maximum long term service temperature based on practical field experience.

(2) Specimens 1/8" thick x 2" dia. or square.

(3) Chemical resistance data are for little or no applied stress. Increased stress, especially localized may result in more severe attack. Examples of common chemicals also included.

(4) Relative cost of material profiled in this brochure (\$ = Least Expensive and \$\$\$\$\$ = Most Expensive)

(5) Estimated rating based on available data. The UL 94 Test is a laboratory test and does not relate to actual fire hazard.

(6) Values are typical averages and will vary with resin lots and by size and shape of product. The data shown is based on dry as manufactured test samples.

Key: A = Acceptable Service

L = Limited Service

U = Unacceptable