

# PRECISION PUNCH & PLASTICS

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ASTM TEST	PROPERTY	CAST 6 NYLON	CAST 12 NYLON	CAST 6 NYLON WITH OIL IMPREGNATION	CAST NYLON 6/12	CAST 6 NYLON WITH PLASTICIZER	HEAT STABILIZED CAST NYLON
D792	Specific gravity	1.15-1.17	1.03	1.14-1.15	1.10-1.13	1.14-1.16	1.15-1.17
D638	Tensile strength (psi)	10,000-13,500	7,900	9,500-12,000	8,700-11,600	9,700-10,800	12,000-13,500
D638	Tensile elongation (%)	20-45	>50	20-55	25-80	25-35	20-30
D638	Tensile modulus (psi)	350-550,000	230,000	350-475,000	240-330,000	375-440,000	485-550,000
D695	Compressive strength (psi)						
	At 10% offset	13,500-16,000	10,000	11,000-14,000	11,000-12,500	11,000-15,000	13,500-16,000
D695	Compressive modulus (psi)	300-400,000	224,000	275,000-375,000	200,000-300,000	250,000-350,000	300-310,000
D790	Flexural strength (psi)	12,500-17,500	9,000	12,500-16,000	15,000-20,000	12,000-13,000	15,000-17,000
D790	Flexural modulus (psi)	350-450,000	238,000	350,000-475,000	285-385,000	330-350,000	420-500,000
D712	Shear strength (psi)	10,000-11,000	6,100	8,000-9,000	7,600-9,000	10,000-11,000	10,000-11,000
D256	Notched Izod impact (ft-lb/in)	0.6-0.9	3.02	1.0-1.8	0.9-1.4	0.82-0.91	0.7-0.9
D785	Hardness, Rockwell R	115-125	108	110-115	100-115	110-115	110-125
D2240	Hardness, Shore D	78-83	76	74-80	75-81	76-78	76-83
D789	Melting point (°F)	450 +/- 10	351	420-460	380-420	450 +/- 10	450 +/- 10
D696	Coefficient of linear thermal expansion (in/in-°F)	5.0×10 <sup>-5</sup>	5.50×10 <sup>-5</sup>	5×10 <sup>-5</sup>	4-5×10 <sup>-5</sup>	4.5×10 <sup>-5</sup>	5×10 <sup>-5</sup>
D621	Deformation under load (%)	0.5-2.5	—	0.78	dependent on grade	1.0-3.5	0.5-2.5
D648	Deflection temperature (°F)						
	At 264 psi	200-400	124	200-400	200-400	330-400	200-400
	At 66 psi	370-430	347	370-450	370-450	400-430	370-430
—	Continuous service temperature (°F)	230	230-250	230	220	230	250
—	Intermittent service temperature (°F)	340	300	320	320	330	355
—	Coefficient of friction dynamic (1)	0.2-0.4	0.2-0.3	0.12-0.15	0.2-0.4	0.22-0.45	0.2-0.4
D570	Water absorption (%)						
	24 h	0.5-0.6	0.12	0.5-0.6	0.5-0.6	0.5-0.6	0.5-0.6
	Saturation	5.0-6.5	1.4	4.5-6.0	4.0-5.0	4.0-6.0	6.5
D149	Dielectric strength, Short time (V/mil)	500-600	500-600	500-600	500-600	500-600	500-600
D150	Dielectric constant						
	At 60 cycles	3.7	3.7	3.7	3.7	3.7	3.7
	At 1,000 cycles	3.7	3.7	3.7	3.7	3.7	3.7
	At 100,000 cycles	3.7	3.7	3.7	3.7	3.7	3.7

Material properties and averages can vary from one manufacturer to another. These properties are given as reference without any obligation or liability on behalf of Precision Punch and Plastics.

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ISO TEST	PROPERTY	CAST 6 NYLON	CAST 12 NYLON	CAST 6 NYLON WITH OIL IMPREGNATION	CAST NYLON 6/12	CAST 6 NYLON WITH PLASTICIZER	HEAT STABILIZED CAST NYLON
ISO1183	Specific gravity	1.15-1.17	1.03	1.14-1.15	1.10-1.13	1.14-1.16	1.15-1.17
ISO527	Tensile strength (MPa)	68.95-93.08	54.47	65.50-83.73	59.98-79.29	66.88-74.46	82.74-93.08
ISO527	Tensile elongation (%)	20-45	>50	45-55	25-80	25-35	20-30
ISO527	Tensile modulus (MPa)	3343-3792	1586	2585-3275	1654-2275	2585-3033	3343-3792
ASTM D695	Compressive strength (bar) At 10% offset	930-1100	690	830-960	760-860	860-1035	930-1100
ASTM D695	Compressive modulus (bar)	24,000	15,000	18,000	17,000	17,000	21,000
ISO178	Flexural strength (MPa)	140	90	135	135	82.74-89.63	120
ISO178	Flexural modulus (MPa)	2895-3447	2200	2585-3275	1965-2654	2275-2413	2895-3447
ISO537	Shear strength (MPa)	68.95-76.00	42.06	50-96	120	68.95-75.84	68.95-75.84
ISO180	Notched Izod impact strength (J/m)	37-48	161	75-96	48-75	44-49	37-48
ISO2039	Hardness, Rockwell R	115-125	108	110-115	100-115	110-115	110-125
ISO868	Hardness, Shore D	78-83	76	74-80	75-81	76-78	76-83
ISO3146	Melting point (°C)	232 +/- 5	177	232 +/- 5	210 +/- 5	232 +/- 5	232 +/- 5
ISO11359	Coefficient of linear thermal expansion (10 <sup>-4</sup> m/m °C)	0.7-0.9	0.99	0.7-0.8	0.7-0.8	0.81	0.7-0.8
ASTM D621	Deformation under load (%)	0.5-2.5	—	0.78	dependent on grade	1.0-3.5	0.5-1.0
ISO75	Deflection temperature (°C) At 1.80 MPa	95-204	51	95-175	95-175	166-204	95-204
	At 0.45 MPa	188-221	188-232	188-232	188-232	204-221	188-221
—	Continuous service temperature (°C)	105	110	105	105	110	105
—	Intermittent service temperature (°C)	170	150	160	160	166	180
ISO62	Water absorption (%) 24 h	0.5-0.6	0.12	0.5-0.6	0.5-0.6	0.5-0.6	0.5-0.6
	Saturation	6.5	1.4	4.5-6.0	4.0-5.0	4.0-6.0	6.5
IEC243	Dielectric strength, Short time (kV/mm)	50	50	50	50	50	—
IEC250	Dielectric constant At 60 cycles	3.7	3.7	3.7	3.7	3.7	3.7
	At 1,000 cycles	3.7	3.7	3.7	3.7	3.7	3.7
	At 100,000 cycles	3.7	3.7	3.7	3.7	3.7	3.7

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