

TYPICAL PROPERTIES OF NYLONS (DRY, AS MOLDED)

| ASTM or UL Test | Property | TYPE | | | |
|--------------------|---|------------------|------------------|------------------|--------------------|
| | | 6/6 | 6 | 6/12 | 11 |
| PHYSICAL | | | | | |
| D792 | Specific gravity | 1.14 | 1.13 | 1.06 | 1.04 |
| D792 | Specific volume (in ³ /lb) | 24.2 | 24.5 | 25.9 | 26.6 |
| D570 | Water absorption , 24 h, 1/8-in thk (%) | 1.2 | 1.6 | 0.25 | 0.4 |
| MECHANICAL | | | | | |
| D638 | Tensile strength (psi) | 12,000 | 11,800 | 8,800 | 8,500 |
| D638 | Elongation (%) | 60 | 150 | 150 | 120 |
| D638 | Tensile modulus (10 ⁵ psi) | 4.2 | 3.8 | 2.9 | 1.8 |
| D790 | Flexural modulus (10 ⁵ psi) | 4.1 | 4.0 | 2.9 | 1.5 |
| D256 | Impact strength , Izod (ft-lb/in of notch) | 1.0 | 1.0 | 1.0 | 3.3 |
| D785 | Hardness , Rockwell R | 121 | 119 | 114 | — |
| THERMAL | | | | | |
| C177 | Thermal conductivity (Btu-in/hr-ft ² -°F) | 1.7 | 1.7 | 1.5 | — |
| D696 | Coefficient of thermal expansion (10 ⁻⁵ in/in-°F) | 4.0 | 4.5 | 5.0 | 5.1 |
| D648 | Deflection temperature (°F) | | | | |
| | At 264 psi | 194 | 152 | 194 | 118 |
| | At 66 psi | 455 | 365 | 356 | 154 |
| UL 94 | Flammability rating , 1/8 in | V-2 | V-2 | V-2 | — |
| ELECTRICAL | | | | | |
| D149 | Dielectric strength (V/mil) | | | | |
| | Short time, 1/8-in thk | 600 | 400 | 400 | 425 |
| D150 | Dielectric constant | | | | |
| | At 1 kHz | 3.9 | 3.7 | 4.0 | 3.3 |
| D150 | Dissipation factor | | | | |
| | At 1 kHz | 0.02 | 0.02 | 0.02 | 0.03 |
| D257 | Volume resistivity (ohm-cm) | | | | |
| | At 73°F, 50% RH | 10 ¹⁵ | 10 ¹⁵ | 10 ¹⁵ | 2×10 ¹³ |
| D495 | Arc resistance (s) | 116 | — | 121 | — |

*0.040-in thick specimen.

These products are available from

| ASTM TEST | PROPERTY | CAST 6 NYLON | CAST 12 NYLON | CAST 6 NYLON WITH OIL IMPREGNATION | CAST NYLON 612 | 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) | 12,000-13,500 | 7,900 | 9,500-11,000 | 8,700-11,500 | 9,700-10,800 | 12,000-13,500 |
| D638 | Tensile elongation (%) | 20-45 | >50 | 45-55 | 25-80 | 25-35 | 20-30 |
| D638 | Tensile modulus (psi) | 485-550,000 | 230,000 | 375,000-475,000 | 240-330,000 | 375-440,000 | 485-550,000 |
| D695 | Compressive strength (psi) At 10% offset | 15,500-18,000 | 10,000 | 12,000-14,000 | — | 22,000-25,000 | — |
| D695 | Compressive modulus (psi) | 300-350,000 | 224,000 | 275,000-375,000 | — | 250,000-275,000 | 300-310,000 |
| D790 | Flexural strength (psi) | 15,500-17,500 | 9,000 | 14,000-16,000 | 15,000-20,000 | 12,000-13,000 | 15,000-16,000 |
| D790 | Flexural modulus (psi) | 420-500,000 | 238,000 | 375,000-475,000 | 285-385,000 | 330-350,000 | 420-440,000 |
| 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) | 0.7-0.9 | 3.02 | 1.4-1.8 | 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 | 110-115 |
| D2240 | Hardness, Shore D | 78-83 | 76 | 74-78 | 75-81 | 76-78 | 76-78 |
| D789 | Melting point (°F) | 450 +/- 10 | 351 | 450 +/- 10 | 410 +/- 10 | 450 +/- 10 | 450 +/- 10 |
| D696 | Coefficient of linear thermal expansion (in/in-°F) | 5.0x10 ⁻⁵ | 5.50x10 ⁻⁵ | 3.50x10 ⁻⁵ | 4-4.5x10 ⁻⁵ | 4.5x10 ⁻⁵ | 4.5x10 ⁻⁵ |
| D621 | Deformation under load (%) | 0.5-2.5 | — | 0.78 | dependent on grade | 1.0-3.5 | 0.5-1.0 |
| D648 | Deflection temp. (°F) At 264 psi | 330-400 | 124 | 330-400 | 330-400 | 330-400 | 330-400 |
| | At 66 psi | 400-430 | 347 | 400-430 | 400-430 | 400-430 | 400-430 |
| — | Continuous service temp. (°F) | 230 | 250 | 230 | 210 | 230 | 250 |
| — | Intermittent service temp. (°F) | 330 | 300 | 330 | 300 | 330 | 330 |
| — | Coefficient of friction dynamic (1) | 0.22 | 0.2-0.3 | 0.12 | N/A | N/A | 0.22 |
| 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 | 5.0-6.0 | .45 (480 hrs) | 2.0-2.5 | 4.0-5.0 | 5.0-6.0 | 5.0-6.0 |
| D149 | Dielectric strength, Short time (V/mil) | 500-600 | — | 500-600 | 500-600 | 500-600 | — |
| D150 | Dielectric constant At 60 cycles | 3.7 | — | 3.7 | 3.7 | 3.7 | — |
| | At 1,000 cycles | 3.7 | — | 3.7 | 3.7 | 3.7 | — |
| | At 100,000 cycles | 3.7 | — | 3.7 | 3.7 | 3.7 | — |

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