

SELECTIVE LASER SINTERING (SLS) MATERIAL RANGE. MATERIAL PROPERTIES (for comparative purposes only).



| General Properties | Method | Value | Value | Value | Value |
|--|--------------|-------------------------------|-------------------------------|-------------------------------|----------------------------------|
| | | Nylon PA | Nylon Glass-Filled | Nylon High Strength | Nylon Ex |
| Specific Gravity | ASTM D792 | 1.00 g/cm ³ | 1.49 g/cm ³ | 1.20g/cm ³ | 1.01 g/cm ³ |
| SLS Moisture Absorption – 24 hours | ASTM D570 | 0.07% | 0.22% | N/A | 0.48% |
| Moisture Saturation | ASTM D570 | N/A | N/A | N/A | 1.15% |
| Tensile Strength, Yield | ASTM D638 | N/A | 27 MPa | N/A | 37 MPa (5366 psi) |
| Tensile Strength, Ultimate | ASTM D638 | 43 MPa | 26 MPa | 48-51 MPa | 48 MPa (6961 psi) |
| Tensile Modulus | ASTM D638 | 1586 MPa | 4068 MPa | 5475 -5725 MPa | 1517 MPa (220 ksi) |
| Elongation at Yield | ASTM D638 | N/A | 1.4% | N/A | 5% |
| Elongation at Break | ASTM D638 | 14% | 1.4% | 4.5% | 47% |
| Flexural Strength, Yield | ASTM D790 | N/A | N/A | N/A | 42 MPa (6091 psi) |
| Flexural Strength, Ultimate | ASTM D790 | 48 MPa | 37 MPa | 83-89 MPa | 46 MPa (6672 psi) |
| Flexural Modulus | ASTM D790 | 1387 MPa | 3106 MPA | 4400-4550 MPa | 1310 MPa (190 ksi) |
| Hardness , Shore D | ASTM D2240 | 73 | 77 | 75 | 74 |
| Hardness, Rockwell L | ASTM D785 | N/A | N/A | N/A | 69 |
| Hardness, Rockwell M | ASTM D785 | N/A | N/A | N/A | 34 |
| Impact Strength (notched Izod, 23°C) | ASTM D256 | 32 J/m | 41 J/m | 37.4 J/m | 74 J/m (1.4 ft-lb/in) |
| Impact Strength (unnotched Izod, 23°C) | ASTM D256 | 336 J/m | 123 J/m | 310 J/m | 1486 J/m (>27.8 ft-lb/in) |
| Gardner Impact | ASTM D5420 | 2.7 J | 4.5 J | 5 J | 11.8 J (8.7 ft-lb) |
| Heat Deflection Temperature | ASTM D648 | | | | |
| | @ 0.45 MPa | 180 °C | 179 °C | 184°C | 188 °C (370 °F) |
| | @ 1.82 MPa | 95 °C | 134 °C | 179°C | 48 °C (118 °F) |
| Coefficient of Thermal Expansion | ASTM E831 | | | | |
| | @ 0 -50 °C | 82.6 µm/m-°C | 82.6 µm/m-°C | 138.3 µm/m-°C | 120 µm/m-°C (66.7 µin/in-°F) |
| | @ 85 -145 °C | 179.2 µm/m-°C | 179.2 µm/m-°C | 267.2 µm/m-°C | 342 µm/m-°C (190 µin/in °F) |
| Specific Heat Capacity | ASTM E1269 | 1.64 J/g -°C | 1.09 J/g -°C | 1.503 J/g -°C | 1.75 J/g -°C (0.418 BTU/lb-°F) |
| Thermal Conductivity | ASTM E1225 | 0.70 W/m-K | 0.47 W/m-K | | 0.51 W/m-K (3.5 BTU-in/hr-ft-°F) |
| Flammability | UL94 | HB | HB | HB | HB |
| Volume Resistivity | ASTM D257 | 5.9 x 10 ¹³ ohm-cm | 3.2 x 10 ¹¹ ohm-cm | 6.7 x 10 ¹⁵ ohm-cm | 1.3 x 10 ¹³ ohm-cm |
| Surface Resistivity | ASTM D257 | 7.0 x 10 ¹³ ohm | 3.2 x 10 ¹¹ ohm | 5.2 x 10 ¹⁵ ohm | 4.9 x 10 ¹² ohm |
| Dissipation Factor, 1 KHz | ASTM D150 | 0.044 | 0.177 | 0.028 | 0.050 |
| Dielectric Constant, 1 KHz | ASTM D150 | 2.73 | 6.27 | 3.14 | 4.5 |
| Dielectric Strength | ASTM D149 | 17.3 kV/mm | 8.7 kV/mm | 18.5 kV/mm | 18.5 kV/mm (470 kV/in) |