

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)