

Plastic Grades for 3D Printing

Material	Other names	Descriptions	Limitations	Applications	Price index	Natural color	Color match	Density - g/cm3	Water absorption ASTM D570 - %	Hardness ASTM D2240 - Shore D	IZOD impact (Notched) ASTM D256 - J/m	Yield tensile strength ASTM D638 - Mpa	Elongation at break ASTM D638 - %	Flexural strength ASTM D790 - Mpa	Flexural modulus ASTM D790 - Mpa	Heat deflection temperature at 66 psi ASTM D648 - °C	Glass transition temperature - °C / °F	Inflammability - UL94
SLS - EOS PA 2200	Nylon PA12	This grade is a synthetic thermoplastic polymer with the lowest melting point of all nylon. It is great for printing complex and detailed parts. It has high strength, high elongation and flexible without fracture, good chemical resistance, low friction and good dimensional stability. It is suitable for painting, impregnating, coating and sandblasting.	Printed parts have a grainy surface	Possible for substitute injection molding plastics: medical applications, automotive design, production parts	1	White granular	N/A	0.93 - 1	0.3 - 0.7	75	32 - 45	1700	15 - 22	46 - 54	1500 - 2000	163 - 182	55 °C / 130°F	HB
SLA - UTR 9000	ABS Like	This resin is highly accurate and durable material. Commonly used for stereolithography, it has a medium viscosity, good strength and flexibility with a good resistance to yellowing.	The lowest heat deflection of all SLA material, poor temperature resistance, lower elongation compared to injection-molded ABS	Master patterns, concept models, general parts and functional prototypes	1	White liquid	N/A	1.13 - 1.2	0.65 ± 0.15	82 - 86	45 - 55	2589 - 2695	12 - 20	38 - 56	2692 - 2775	50 - 55	62°C / 144°F	HB
SLA - Crysta 8	PMMA like	It is a SLA transparent resin with similar properties to UTR 9000. It commonly used for parts with higher surface finishing requirements.	Poor temperature resistance	Master patterns, concept models, general parts and functional prototypes	1	Transparent liquid	N/A	1,12	0,48	83	27 - 38	2590 - 2760	7 - 11	44 - 62	2670 - 2870	40 - 51	50°C / 122°F	HB
FDM - Stratasys Antero 800NA	PEKK	This grade is a high-performance semi-crystalline thermoplastic. It has excellent mechanical properties in terms of toughness and high strength, good resistant to heat, high temperature, abrasion and wear. The chemical resistance is good with high dielectric strength.	Moderate resistant to nitric acid, sulfuric acid, methylene chloride	Alternative to aluminum and steel in certain cases. Commonly used in transport and aeronautics.	5	Translucent brown powder	N/A	1.26 - 1.28	8,7	85	36.8 - 44.2 (XZ) 27.2 - 32.7 (ZX)	2920 - 3100 (XZ) 2870 - 3480 (ZX)	6.1 - 6.4 (XZ) 1.22 - 1.8 (ZX)	72.5 - 93.1 (XZ) 45.86 - 57 (ZX)	3070 (XZ) 2680 - 2730 (ZX)	150	155°C / 311°F	-
FDM - Stratasys FDM Nylon 12	Nylon 12	This plastic have excellent mechanical properties. It includes high fatigue resistance and excellent chemical resistance. It a lighter alternative to aluminum and steel in certain use cases.	Lower flexural and tensile strength, heat deflection and glass transition temperature than standard Nylon.	Alternative to aluminum and steel in certain cases. Commonly used in transport and aeronautics.	3	White powder	N/A	1	0,25	40 - 88	135 - 150 (XZ) 50 - 53 (ZX)	1282 - 1310 (XZ) 1138 - 1241 (ZX)	9.5 - 30 (XZ) 5 - 5.4 (ZX)	46 - 53 (XZ) 38.5 - 48(XZ)	1276 (XZ) 1180 (ZX)	97	34°C / 91°F	HB
FDM - Stratasys ULTEM™ 9085	ULTEM™ 9085	It is high-performance thermoplastic with superior mechanical properties with high strength-to-weight ratio. It has good FST (Flame, smoke and toxicity) resistance and good chemical resistance. It is a flame retardant UL94V0.		Digital manufacturing and rapid prototyping, transportation industry, aerospace	4	Natural light Tan	N/A	1,34	0,39	-	120 (XZ) 48 (ZX)	2150 (XZ) 2270 (ZX)	5.8 (XZ) 2.2 (ZX)	69 (XZ) 42 (ZX)	2300 (XZ) 2050 (ZX)	153	186°C / 366°F	V0
FDM - Stratasys ULTEM™ 1010	ULTEM™ 1010	It is a general-purpose grade that offers excellent strength, thermal stability and the ability to withstand steam autoclaving. It have the highest heat resistance with UL94 V0 certification.	Not easy to print. After it's printed, the print shrinks	Food production tools, custom medical appliances, aerospace and automotive parts	4	Transparent amber	N/A	1,27	0,7	109 (rockwell hardness-M, ASTM D785)	24 - 41	2770 (XZ) 2200 (ZX)	3.3 (XZ) 2 (ZX)	69 (XZ) 42(XZ)	2820 (XZ) 2230 (ZX)	216	215°C / 420°F	V0