

3D PRINTING TECHNOLOGIES, MATERIALS & APPLICATIONS FOR POLYMERS



SLS

Selective Laser Sintering

SAF™

Selection Absorption Fusion

MJF

Multi Jet Fusion

FDR

Fine Detail Resolution

SLA

Stereolithography

FDM

Fused Deposition Modelling

PolyJet™

Material Jetting

SLS, SAF™, MJF and FDR are all part of the powder bed fusion technology branch within industrial 3D printing. This branch of technologies has high dimensional accuracy, is used for various applications, and can supplement traditional manufacturing technologies in small- to mid-sized serial production.

Technology Application

FDR is also a powder bed fusion technology based on SLS. However, FDR excels at very small parts with very fine details.

SLA has one of the best dimensional accuracies within 3DP technologies, but due to its chemical properties, its longevity is lower, which is why SLA is mainly used for prototypes and models.

FDM has lower dimensional accuracy but offers a vast selection of materials. It is used for prototypes, models, or niche production with specific material property requirements.

PolyJet™ has exceptionally high dimensional accuracy and can combine 500,000 different colors and varying hardnesses in the same print, making it ideal for prototypes and models.

Material Selection

PA 2200
PA 3200 GF
PA 2210 FR
PA 2241 FR
PA 603-CF
PA 640-GSL
PA 12 Alu
TPU (59A & 88A)

Polypropylene (PP)

PA 11
PA 12
PA 12 White
PA 12 GB

PA 1101

Accura ClearVue
Accura Extreme
Accura 25
Accura HPC
Somos® WaterClear Ultra

Ultem (9085 & 1010)
Polycarbonate (PC)
PC/ABS & PC-ISO
ABS (ESD7, M30 & M30i)
ASA
SR-30
PEKK & PEKK-ESD
PA 12 CF
Polypropylene (PP)
& other engineering materials

Digital Materials

Manufacturing Details

Manufacturing via ultraviolet laser from nylon (PA) or thermoplastic polyurethane (TPU) powder

Manufacturing via infrared light from polypropylene powder

Manufacturing via infrared light from nylon powder

Manufacturing via ultraviolet laser from nylon powder

Manufacturing via ultraviolet laser from epoxy resin

Manufacturing via extrusion from a polymer thread

Manufacturing via ultraviolet laser from acrylic based fluid

Maximum Build Sizes

700 x 380 x 580 mm

315 x 208 x 293 mm

380 x 284 x 380 mm

200 x 250 x 125 mm

1500 x 750 x 550 mm

900 x 600 x 900 mm

490 x 390 x 200 mm

Post-processing Offerings

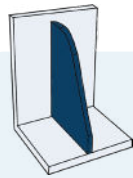
Blasting, assembly, sanding, vapour smoothing (max 385 x 585 x 385 mm), coating, coloring, lacquering, painting, metal plating, threaded/non-threaded inserts & vibration grinding

Blasting, vapour smoothing (max 385 x 585 x 385 mm) & coloring

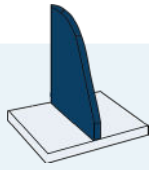
Assembly, support removal, sanding, coating, lacquering, painting, metal plating, threaded/non-threaded inserts

Support removal, sanding & threaded/non-threaded inserts

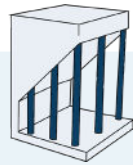
3D PRINTING GUIDELINES FOR EVERY POLYMER TECHNOLOGY



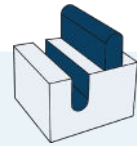
Supported Walls



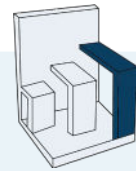
Unsupported Walls



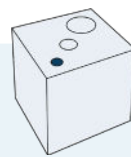
Support & Overhangs



Embossed & Engraved Details



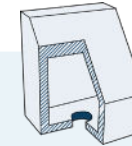
Horizontal Bridges



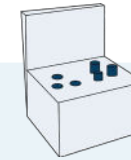
Holes



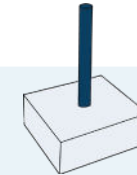
Connecting & Moving Parts



Escape Holes



Minimum Features



Pin Diameter



Tolerance

	Supported Walls	Unsupported Walls	Support & Overhangs	Embossed & Engraved Details	Horizontal Bridges	Holes	Connecting & Moving Parts	Escape Holes	Minimum Features	Pin Diameter	Tolerance
SLS	P1XX 0.6 mm P3XX 0.8 mm P5XX 0.6 mm P7XX 0.8 mm	1 mm	N/A	1 mm width & height	N/A	> Ø1.5 mm depending on thickness	>0.3 mm for moving parts; > 0.1 mm for connection assemblies; > 0.5 mm radial	> 12 mm multiple holes are preferred	P1XX 0.5 mm P3XX 0.6 mm P5XX 0.5 mm P7XX 0.6 mm	> 1 mm diameter < 15 mm height	Minimum ± 0.2 mm & ± 0.25% of dimension
MJF	0.5 mm	1 mm	N/A	0.4 mm width & height	N/A	> Ø0.8 mm depending on thickness	>0.3 mm for moving parts; > 0.3 mm for connection assemblies; > 0.3 mm radial	> 6 mm multiple holes are preferred	0.5 mm	> 1 mm diameter < 15 mm height	Minimum ± 0.2 mm & ± 0.25% of dimension
SAF™	0.8 mm	1 mm	N/A	1 mm width & height	N/A	> Ø1.5 mm depending on thickness	>0.3 mm for moving parts; > 0.1 mm for connection assemblies; > 0.5 mm radial	> 12 mm multiple holes are preferred	2 mm	> 2 mm diameter < 15 mm height	Minimum ±0.2 mm & ±0.25% of dimension
FDR	0.2 mm	0.4 mm	N/A	0.4 mm width & height	N/A	> Ø0.6 mm depending on thickness	>0.3 mm for moving parts; > 0.1 mm for connection assemblies; > 0.5 mm radial	> 6 mm multiple holes are preferred	0.25 mm	> 0.5 mm diameter < 15 mm height	1-3 mm ± 0.08 mm; > 3-6 mm ± 0.11 mm; > 6-10 mm: ± 0.14 mm; >10-18 mm: ± 0.17 mm; >18-30 mm: ± 0.20 mm; >30-50 mm: ± 0.23 mm
SLA	HR 0.25 mm NR 0.5 mm	HR 0.5 mm NR 1 mm	Support ≤ 30°	0.4 mm width & height	N/A	> Ø0.5 mm depending on thickness	> 0.1 mm for moving parts; > 0.1 mm for connections	> 3 mm multiple holes are preferred	0.25 mm	> 0.5 mm diameter < 15 mm height	Minimum ± 0.1 mm & ± 0.15% of dimension
PolyJet™	0.8 mm	1 mm	Support always required	0.5 mm width & height	N/A	> Ø0.5 mm	>0.2 mm for moving parts; >0.1 mm for connection assemblies; >0.8 mm for radial	> 20 mm multiple holes are preferred	0.5 mm	> 1 mm diameter < 15 mm height	Minimum ± 0.2 mm & ± 0.25% of dimension
FDM	0.8 mm	1 mm	Support ≤ 45°	0.6 mm width & height	10 mm	> Ø2 mm	> 0.5 mm	> 20 mm	2 mm	> 3 mm diameter < 15 mm height	Minimum ± 0.2 mm & ± 0.25% of dimension

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* The guide above is designed to ensure a trouble-free 3D printing experience. Smaller tolerances and finer details are possible but must be verified for each geometry. This guide is intended for parts with uniform wall thickness throughout the entire model. Variations in wall thickness should be equal to wall thickness × 0.7 (e.g., 2 mm × 0.7 = 1.4 mm), which helps minimize warping. The recommended font for embossed and engraved text is Arial Black. Use bold and a minimum font size of 12, as details smaller than the recommended size may disappear. The best results are achieved in the planar region along the Z-direction. The preferred file format is .STL.