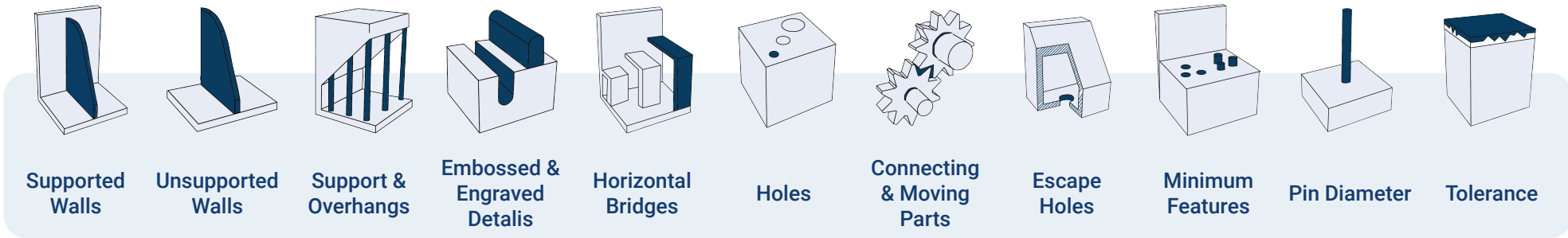


# 3D PRINTING TECHNOLOGIES & MATERIALS



SLS	SAF™	MJF	SLA	FDM	PolyJet™
Selective Laser Sintering	Selection Absorption Fusion	Multi Jet Fusion	Stereolithography	Fused Deposition Modelling	Material Jetting
PA 2200 PA 3200 GF PA 2210 FR PA 603 CF PA 640 GSL PA 1101 TPU 88A	PA 11	PA 12 PA 12 White PA 12 GF	Accura ClearVue Accura Extreme Accura SI 25 Accura HPC	Ultem ABS-ESD7 Nylon 12 CF PEEK CF 30 Carbon PA Polypropylene (PP) + more engineering materials	Digital Materials
<b>Material Selection</b>					
<b>Manufacturing Details</b>					
Manufacturing via ultraviolet laser from nylon (PA) or thermoplastic polyurethane (TPU) powder.	Manufacturing via infrared light from biobased nylon powder.	Manufacturing via infrared light from nylon powder.	Manufacturing via ultraviolet laser from epoxy fluid.	Manufacturing via extrusion from a polymer thread.	Manufacturing via ultraviolet laser from acrylic based fluid.
<b>Maximum Build Sizes</b>					
700 x 380 x 580 mm	315 x 208 x 293 mm	380 x 284 x 380 mm	1500 x 750 x 550 mm	900 x 600 x 900 mm	490 x 390 x 200 mm
<b>Technology Applications</b>					
With a high dimensional accuracy producing sturdy parts, SLS is used for serial production, prototypes, and models. Raw parts will appear off-white; CF/GSL and TPU will appear dark grey.	With a high dimensional accuracy producing sturdy parts, SAF is used for serial production, prototypes, and models. Raw parts will appear dark grey.	With a high dimensional accuracy producing sturdy parts, MJF is used for serial production, prototypes, and models. Raw parts will appear dark grey, except PA 12 White that appear off-white.	With an exceptional high dimensional accuracy, SLA is used for prototypes, and models. Raw parts will appear grey, white or transparent depending on the material.	With a lower dimensional accuracy, FDM is used for prototypes, and models where there is a specific requirement for the plastic material. Raw parts will appear in colors depending on the material.	With an exceptional high dimensional accuracy, combined with 500.000 different color options and different hardness, PolyJet is used for prototypes and models.
<b>Post-processing Options</b>					
Assembly, sanding, coating, coloring, lacquering, painting, metal plating, threaded/non-threaded inserts, vibration grinding & vapor smoothing (385 x 585 x 385 mm).	Assembly, sanding, coating, coloring, lacquering, painting, metal plating, threaded/non-threaded inserts, vibration grinding & vapor smoothing (385 x 585 x 385 mm).	Assembly, sanding, coating, coloring, lacquering, painting, metal plating, threaded/non-threaded inserts, vibration grinding & vapor smoothing (385 x 585 x 385 mm).	Assembly, support removal, sanding, coating, lacquering, painting, metal plating, threaded/non-threaded inserts.	Support removal, sanding, threaded/non-threaded inserts.	Support removal, sanding, threaded/non-threaded inserts.



	Supported Walls	Unsupported Walls	Support & Overhangs	Embossed & Engraved Details	Horizontal Bridges	Holes	Connecting & Moving Parts	Escape Holes	Minimum Features	Pin Diameter	Tolerance
<b>SLS</b> Selective Laser Sintering	P1XX 0.6 mm P3XX 0.8 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 P7XX 0.6 mm	>1 mm diameter <15 mm height	Minimum ± 0.2 mm & ± 0.25% of dimension
<b>MJF</b> Multi Jet Fusion	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 for radial	>6 mm multiple holes are preferred	0.5 mm	>1 mm diameter <15 mm height	Minimum ± 0.2 mm & ± 0.25% of dimension
<b>SAF™</b> Selective Absorption Fusion	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 for radial	>12 mm multiple holes are preferred	2 mm	>2 mm diameter <15 mm height	Minimum ± 0.2 mm & ± 0.25% of dimension
<b>SLA</b> Stereolithography	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
<b>PolyJet™</b> Material Jetting	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
<b>FDM</b> Fused Deposition Modelling	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

The above is a guide to a trouble free 3D printing. Smaller tolerances and smaller details are possible but will have to be verified for every geometry. This guide is intended for parts with uniform wall thickness throughout the entire model, variation in wall thickness is equal to wall thickness x 0.7 (e.g. 2 mm x 0.7 = 1.4 mm growing wall this also minimize warping). Recommended font size for embossed and engraved text is Arial (Black). Use bold and font size minimum of 12 (details smaller than the recommended size can disappear). Best result is in the planar region in the z-direction.