

Parameter	FDM	Resin	Notes
MINIMUM FEATURE SIZES 5 items			
Wall thickness (minimum)	1.2mm (3 × 0.4mm nozzle)	0.5mm	FDM walls at nozzle-width multiples print cleanest.
Minimum detail size	~0.5mm	~0.1mm	Resin excels at fine detail. FDM limited by nozzle.
Minimum hole diameter	2mm (bore out smaller)	0.5mm	FDM holes print ~0.1–0.2mm undersized — design larger.
Max unsupported bridge	50–60mm at bridge speed	N/A	Orient model to minimise bridging spans.
Max unsupported overhang	45–50° from vertical	40–45°	Beyond this angle supports are required.
TOLERANCES FOR MATING PARTS 4 items			
Press fit (interference)	0mm nominal (or –0.1mm)	0mm nominal	Test with a calibration print — varies by material.
Sliding fit	+0.2mm on hole diameter	+0.1mm	0.1mm clearance per side for smooth sliding.
Free running fit	+0.3–0.4mm on diameter	+0.2mm	For pins, shafts, and loose mechanical fits.
Heat-set insert bore	Per insert spec – 0.1mm	N/A	Slightly undersized ensures grip. PETG/PA recommended.
FILE PREPARATION 4 items			
Export format	STL or STEP preferred	STL or STEP	STEP preserves exact geometry. STL is triangulated.
Mesh quality	High resolution export	High	Low-poly STL shows facets on curved FDM surfaces.
Non-manifold check	Run before submitting	Required	Holes in mesh cause incorrect infill or slice failure.

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Wall thickness check	Use slicer preview layer view	Use slicer	Thin walls below nozzle width may be skipped entirely.