

Standard Tolerances and Guidelines

Process	Floor Thickness (minimum)	Vertical Wall (minimum)	Slot Width (minimum)	Text Size (minimum)	Hole Size (minimum)	Recessed Features	Standard Tolerance
SLA's – Normal Resolution	.020"	.020"	.020" @ .100" thickness	.020" wide & .012" tall	.030" ID	.012" deep	+/- .005" for all features less than 5". +/- .0015" per inch for all features greater than 5" Example 1: A window opening 4.5" wide will be +/- .005" from nominal. Example 2: Two bosses 10" apart will be +/- .015" from nominal.
SLA's – High Resolution	.020"	.008"	.007" @ .100" thickness	.010" wide & tall	.018" ID	.004" deep	
Cast Urethanes	see below	.030" across short distances	.030", also must maintain 1:1 aspect ratio width:depth	Same as master pattern	.030" ID	Same as master pattern	
PolyJet – Shore D	.010"	.020"	.010"	.020" wide & .004" tall or deep	.030" ID	Minimum .004" deep	
PolyJet – Shore A	.030"	.050"	.020"	.020" wide & .004" tall or deep	.050" ID	Minimum .004" deep	
Sintered Nylon	.030"	.030", and they will build closer to .035"-.040"	.030" @ .100" thickness, and they will build ~.005" undersized	Minimum .030" wide and .020" tall or deep.	.035" ID	Minimum .020" deep	+/- .005" in X and Y for all features smaller than 2", and +/- .003" per inch for all features > 2". +/- .010" in the first inch of Z, then +/- .003" per inch thereafter. Example 1: A window opening 4.5" wide will be +/- .0135" from nominal. Example 2: A part 2" tall will be +/- .013" from nominal.

Additional Considerations

SLA's

- Upward facing recesses and pockets built horizontally should be a minimum of .012" deep to build in normal resolution, and a minimum of .004" deep to build in high resolution. Downward facing recesses should be .020" minimum, regardless of build style. Please ask your Estimator if you're concerned about build orientation.
- High resolution SLA's can only be run in a 5" x 5" x 10" build area.

Cast Urethanes

- Most of the feature limitations will be a direct result of the process used to create the master pattern. In other words, if it builds on the master it should show up in the castings.
- The additional concern with castings, primarily with the 1:1 aspect ratio for thin slots and recesses, is mold life. Features that are deeper than they are wide will reduce silicone mold life. Please ask your Estimator if you have any concerns about mold life, or for further clarification about specific mold life issues.
- Floors and walls should be a minimum .030" thick for molding in Shore A, and .020" thick for Shore D.
- Keypad webbing should be a minimum of .030" thick to allow for material flow.
- Mating parts in an assembly should have a minimum of .020" (.010" per side) clearance between all mating parts.
- Color matching has some inherent limitations to it. Materials with a dark base color can not be made lighter, for example, also silicones are more difficult to match than urethanes. Ask your Project Manager about specific color needs.

Polyjet

- The Polyjet machine is capable of producing smaller features than what we state in the table above, particularly with the Shore A materials. But smaller features tend to not survive the part removal and cleaning process, which involves high pressure water blasting to remove the support material. The dimensions in the table above are "safe" dimensions that we know will work.
- Shore A materials, particularly the Tango Black, have a relatively low tear strength. These parts are best used in a compression application (O-rings, gaskets, etc) where they don't receive a lot of stress. They are not recommended for applications where the part needs to stretch or deform repeatedly.

Sintered Nylon

- Holes typically build about .010" under nominal, but can be post-drilled as specified by you.
- When building assemblies in LS Nylon, the clearance required between the mating parts is somewhat geometry dependent. .020" clearance per side typically works well, but for a specific recommendation for your application please ask your Sales Manager.

Guarantee

Protogenic guarantees Customer satisfaction: We will do whatever it takes to assure your satisfaction with our product. That means that, in the unlikely event that you're dissatisfied, we will fix it, replace it, or refund your money. Because of the time-sensitive nature of your project, and our commitment to your success, we're happy to extend this guarantee a full 30 days from your order's last ship date.