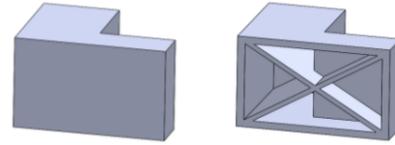


Design Guideline SLS

General Wall Thickness

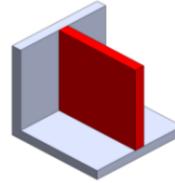
The recommended wall thicknesses of structures.



Wall thickness should be between 1.0 [mm] and max. 6.0 [mm]
As the construction is additive manufactured, only use material where it is really necessary
If high stiffness is required, external walls should be braced with framework or honeycombs, do not design blocks

Supported Walls

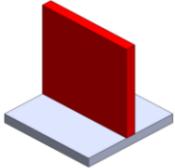
Walls that are connected to the surrounding of the part on at least two sides.



0.8[mm]
For reproducible results and good mechanical properties: 1.0[mm]

Unsupported Walls

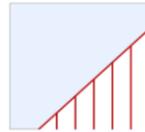
Unsupported walls are connected to the surrounding of the part on less than two sides.



The powder bed provides the support
Note: Too thin and too long walls lead to fragility

Support & Overhangs

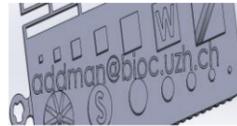
The maximum angle a wall can be printed at without requiring support.



The powder bed provides the support
Below 30° layer steps become visible

Embossed & Engraved Details

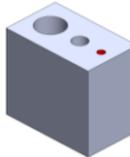
Features on the model that are raised or recessed below the model surface.



Min. 0.5[mm] embossed
Min. Font 14pt
Clearly legible font depends strongly on the font type

Holes

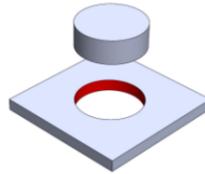
The minimum diameter to successfully manufacture a hole.



1.5[mm] highly depends on the hole length and surrounding wall thickness
Smaller holes are possible in thin areas

Connecting / Moving Parts

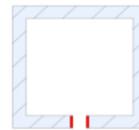
The recommended clearance between two moving or connecting parts.



0.5[mm] for moving parts manufactured in each other
0.2[mm] for moving parts if manufactured separately
0.0[mm] for moving parts if vibratory grinded and manufactured separately

Escape Holes

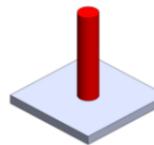
The minimum diameter of escape holes to allow the removal of the powder material.



4.0[mm] with at least two opposite holes

Pin Diameter

The minimum diameter a pin can be printed at.



0.5[mm] / For reproducible results and good mechanical properties: 1.8[mm]
From 8[mm] upwards, design hollow if possible or with internal support structures
Note: The strength depends on the length in relation to the diameter, too thin and too long pins leads to fragility

Post Treatment

Vibratory finishing: Only for the external surface, if no fragile pins or free thin walls are present.

Finishing holes: Holes can be reamed, provided they are accessible and straight.

Dyeing black: Dyestuff does not produce any material deposition on the surface, it penetrates directly into the part. Note: Biocompatibility is no longer guaranteed with dyeing.

Infiltration: Thin-walled floating bodies can be impregnated for increased tightness.