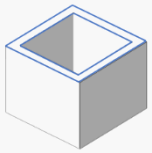
Design guidelines

For parts produced in PA12 based materials with Selective Laser Sintering

DESIGN FEATURES

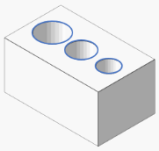


Walls

Recommended wall thickness

Maximum part dimensions	Minimum thickness [mm]*	Optimum thickness [mm]	Maximum thickness [mm]
100 x 100 x 100 mm	0.7	1.5-6.0	8.0
250 x 250 x 250 mm	1.0	2.0-8.0	10.0

** polishing not possible*

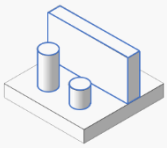


Holes

Recommended hole diameter

Maximum part dimensions	Minimum diameter [mm]	Optimum diameter [mm]	Accuracy* diameter [mm]
100 x 100 x 100 mm	1.5	≥ 2.0	+ 0.10 – 0.30
250 x 250 x 250 mm	2.0	≥ 3.0	+ 0.10 – 0.30

**valid for nominal sizes between 4 and 50 mm*



Feature size

The recommended width of a feature to ensure it will not fail to print[1]

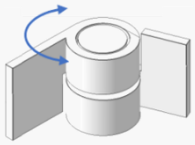
Maximum part dimensions	Minimum width [mm]	Optimum width [mm]	Maximum width [mm]
100 x 100 x 100 mm	1.5	≥ 2.0	n/a
250 x 250 x 250 mm	2.0	≥ 3.0	n/a



Channels

The recommended channel diameter[2]

Maximum part dimensions	Minimum diameter [mm]	Optimum diameter [mm]	Maximum diameter [mm]
100 x 100 x 100 mm	2.5	≥ 4.0	n/a
250 x 250 x 250 mm	3.0	≥ 5.0	n/a

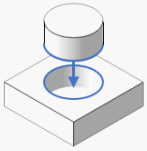


Connecting parts: Moving

The recommended clearance between two moving parts

Maximum part dimensions	Minimum* clearance [mm]	Optimum** clearance [mm]	Maximum clearance [mm]
100 x 100 x 100 mm	0.3	0.5-0.6	n/a
250 x 250 x 250 mm	0.5	0.6-0.8	n/a

** printed separately* *** printed as one*



Connecting parts: Press fit

The recommended clearance between two parts to obtain press fit

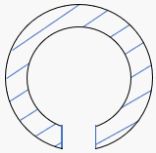
Maximum part dimensions	Minimum clearance [mm]
100 x 100 x 100 mm	0.1
250 x 250 x 250 mm	0.2



Embossed or engraved details or text

The recommended dimensions for features raised or recessed below the model surface

Maximum part dimensions	Minimum feature width/height [mm]	Optimum feature width/height [mm]	Minimum font height [mm]
100 x 100 x 100 mm	0.5	0.5-1.0	5.0
250 x 250 x 250 mm	0.5	0.5-1.0	5.0



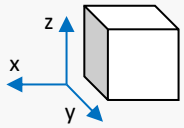
Escape holes

The recommended hole diameter to ensure powder free hollow parts

Maximum part dimensions	Minimum diameter [mm]	Minimum amount of escape holes
100 x 100 x 100 mm	8.0	2
250 x 250 x 250 mm	8.0	2

1 - Maximum feature height to width ratio of 5:1
2 - Maximum channel length = 100 mm

PART QUALITY

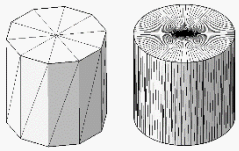


Expected dimensional accuracy*

Valid for nominal sizes between 10 and 250 mm

Max. part dimensions	Linear dimensions XY [mm]	Dimensions Z [mm]
100 x 100 x 100 mm	±0.3% of the longest diagonal	±0.4% of the longest diagonal
250 x 250 x 250 mm	±0.4% of the longest diagonal	±0.5% of the longest diagonal

** with a minimum of ±0.30 mm*



Required data format

Oceanz printing technology uses .STL format, all files are converted to this format

STL conversion	Surface deviation [mm]	Angle tolerance [°]
Export settings	0.01	10-20

This guide covers specific details and design rules how to avoid unintended failures when designing for SLS. To avoid print failure, values for each specification must stay within the minimum-maximum range. To guarantee our manufacturing tolerances, your design should meet the optimum values for each specification. Please note that due to the layer by layer production process and the specific design of each individual product values may differ.

If your design contains specific details or features not mentioned in our design rules, or your design exceeds the maximum part dimensions, please contact us, so we can advise you how to obtain required part quality.

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