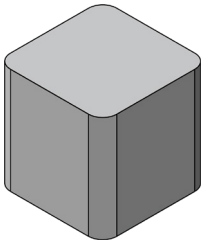
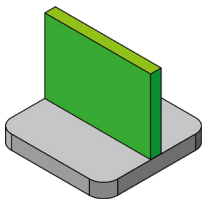
Design Guidelines

CAD-Modelling

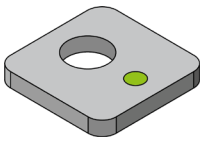


Maximum component size
150 x 150 x 150mm3 with a 20 mm radius

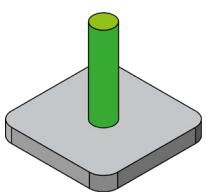
Minimum component size
0.3 x 0.3 x 0.1mm3 (B x T x H)



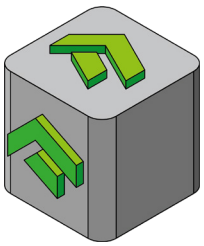
Minimum wall thickness
0.3mm



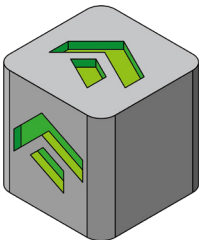
Minimum hole size
Ø 0.5mm vertical
Ø 0.8mm horizontal



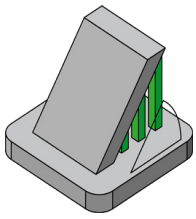
Minimum pin diameter
Ø 0.5mm



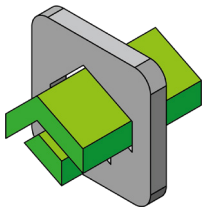
Minimum embossed feature
X/Y W 0.2mm
H 0.1mm
Z W 0.2mm
H 0.1mm



Minimum debossed feature
X/Y W 0.3mm
H 0.1mm
Z W 0.3mm
H 0.2mm



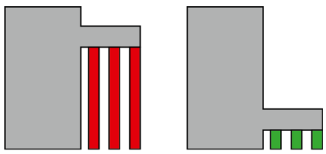
Minimum unsupported overhang angle
0 - 45° degrees: Supports needed
> 45° degrees: No supports needed



Minimum clearance
0.5mm

Design Guidelines

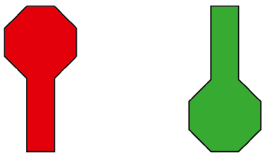
Print Optimisation



Optimising print orientation

The way the part is oriented on the build plate for printing has an impact on surface quality and manufacturing time. Therefore, the following points should be taken into consideration during component orientation:

Minimise number of supports



The number of supports required should be kept to a minimum to save printing time and material. Therefore, large overhangs resting on support structures should be avoided.

Avoid high centres of gravity

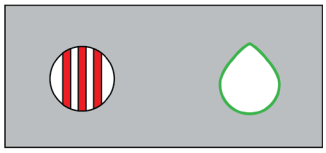
Alignments that shift the centre of gravity of the component upwards should be avoided. This is because the higher the centre of gravity, the more support structures need to be placed to absorb the centre of gravity.

Avoid contact of critical surfaces with supports

Surfaces that meet support structures have a rougher surface quality. Therefore, it is recommended to avoid contact of critical surfaces with support structures.

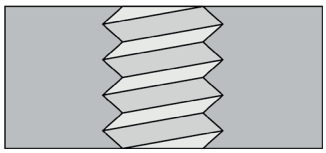
Design Guidelines

Print Optimisation



Holes

Supports may be required for horizontal holes with certain diameters, the support option in MPREP calculates and generates them automatically. The use of support structures for horizontal holes can be avoided by changing the circular hole shape to a teardrop shape, which uses a self-supporting angle. This eliminates the need for additional supports.



Printed threads

Printing holes and then tapping them is often recommended.

The table below serves as a guide:

Thread size Method

< M3 Print holes, cut threads

≥ M3 Print threads, recut threads

Further recommendations

- Adding fillets reduces stresses during geometry changes.
- Unnecessary blocks of printed material should be avoided.
- If practical, internal holes should be printed parallel to the build direction (Z-axis).