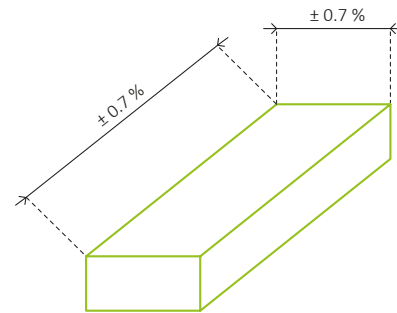


# Design recommendations for selective laser sintering

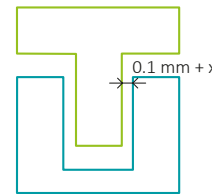
## Tolerances

- ▶ Shrinkage processes during cooling influence the component dimensions depending on the component size and the material used.
- ▶ Manufacturing precision  $\pm 0.7\%$  of the linear dimension (minimum tolerance  $\pm 0.1$  mm).



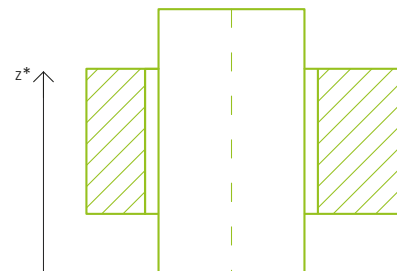
## Bonded parts

- ▶ When designing bonded parts, a gap dimension of 0.1 mm should be allowed for.



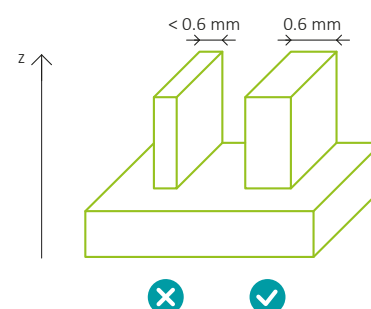
## Joints

- ▶ Axes of rotation should be oriented in the Z direction and should be solid, so that they won't break when the powder is being removed.
- ▶ Cavities must be accessible for powder removal without causing damage to the component.
- ▶ The distance between two walls should be at least 0.6 – 0.8 mm.
- ▶ For the utmost precision, joints can be constructed as two-part assemblies.



## Wall thickness

- ▶ The minimum required wall thickness depends on the relations of the entire component.
- ▶ For filigree elements: Walls must be at least 0.6 – 0.7 mm thick.
- ▶ Whether or not a wall thickness of  $< 0.6$  mm is realistically producible can be checked in each individual situation.



\*Z = direction of layer construction

Still have questions on the design of your component?  
We'd be glad to advise you!



Contact us now:  
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Tel.: +49 (0) 5235 3-43800

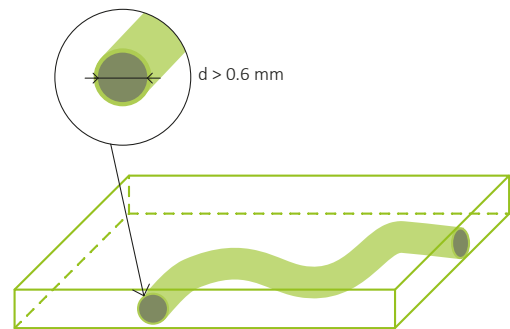
## Drilled holes

- ▶ Components can be produced with blind holes, but through holes are more suitable.
- ▶ In order to minimize the stepped layer effect and achieve a high level of precision, cylindrical components and drilled holes should be oriented in the Z direction.
- ▶ The minimum dimensions for drilled holes can be reviewed on a case-by-case basis.



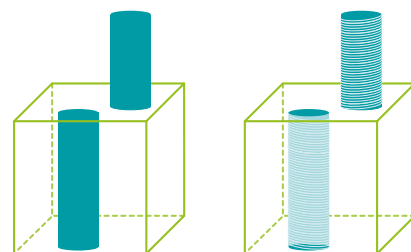
## Channels

- ▶ Channels should have a minimum cross-sectional dimension of 0.6 mm and be accessible from both sides.
- ▶ Notice: The longer and more complex a channel is, the larger the cross-sectional dimension should be.



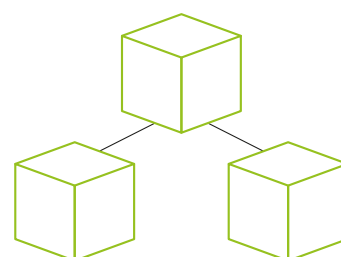
## Thread

- ▶ With 3D printing, components are produced directly from CAD data. Since most CAD programs only show threads schematically, these must be created during the design phase.
- ▶ The smallest printable thread size is M6.
- ▶ Threads as small as M2 can be created manually after production is completed. The appropriate core diameter must be created for this.



## Related assembly groups

- ▶ For assembly groups with multiple components, the same material should be used on all of them so that the same tolerances and deviations apply to each element.
- ▶ Individual elements should be stored as assembly groups.
- ▶ Enough space should be left between the components being assembled to avoid damage.



\*Z = direction of layer construction