3D printing quality: what’s acceptable and what’s not

All models of 3D printed parts must meet the criteria described in the 3D Model Preparation Guidelines. If a model is developed in violation of the Guidelines' criteria, resulting in defects in the printed product, the model development party is responsible. Let's describe the key defects and categorize them into groups:

Considered acceptable

we do not reprint this part: there has either been an error in modeling the part or a printing process peculiarity.

Considered defective

we reprint the item at our own expense and the deadline for order issuance is delayed.

Considered acceptable

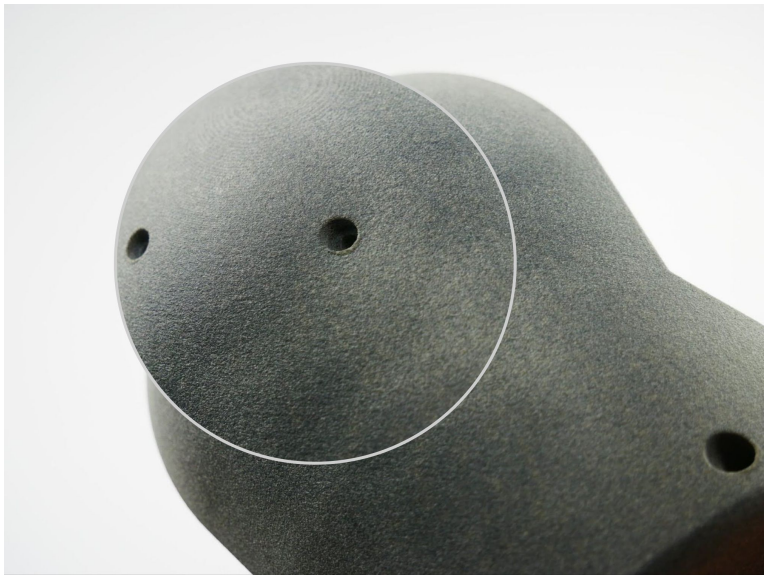
Considered acceptable

we do not reprint this part: there has either been an error in modeling the part or a printing process peculiarity.

1. Color variation of products within the same order.

Considered acceptable

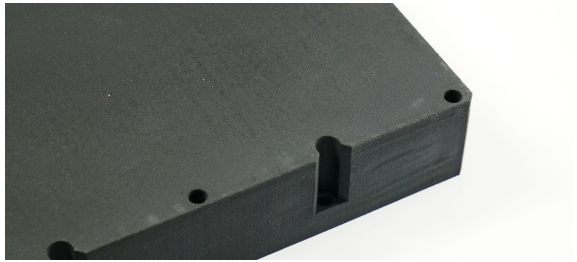
Depends on the location of the parts and the temperature in the platen, as well as the printing density.



2. Visually noticeable print layers.

Considered acceptable

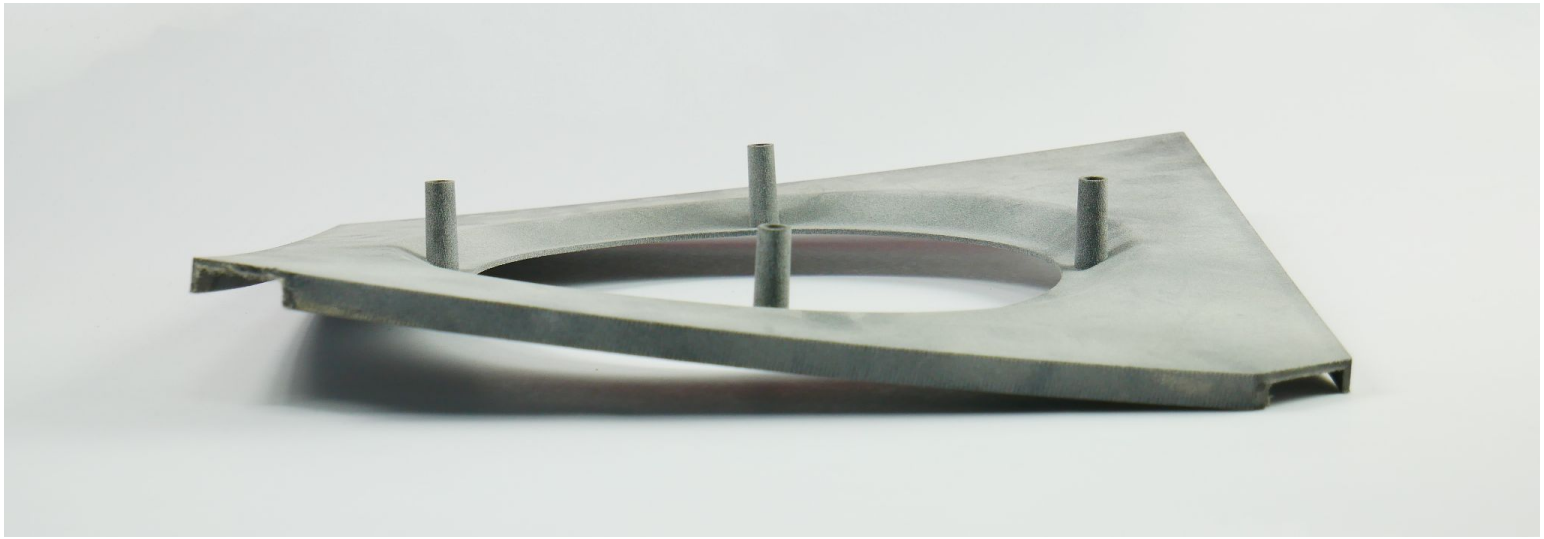
The technology prints layer by layer, but layers are much less visible in MJF printing than in FDM printing. They may show up depending on the location of the parts and how hot they are.



3. Deformation of large and flat parts.

Considered acceptable

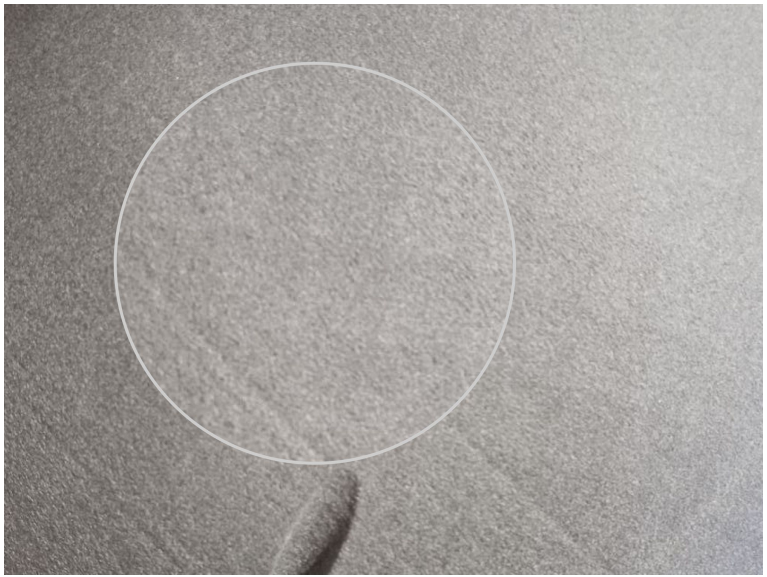
For such parts, spacers or protective frames must be provided at the modeling stage. The larger the part and the thinner its walls, the greater the effect of the chamber temperature on the part's geometry.



4. Polygon visibility, which depends on the detail of the 3D model for printing.

Considered acceptable

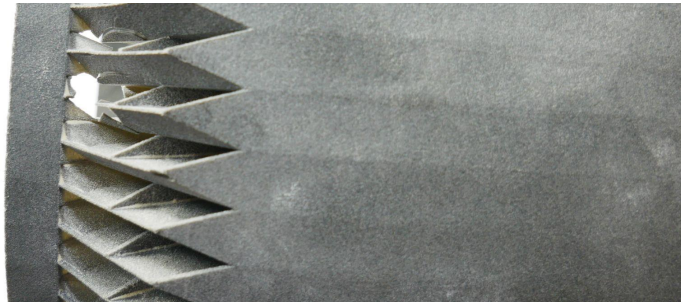
When saving a 3D model file, you can select the degree of corner smoothing and detail. However, a balance must be observed: the file size should not exceed 100 MB. The optimal file size is up to 50 MB.



5. Burned out walls with a thickness of less than 0.5 mm.

Considered acceptable

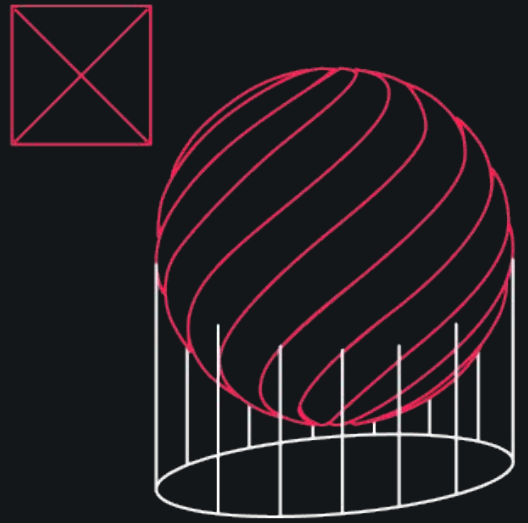
According to model preparation requirements, the minimum thickness of any model wall must be greater than 0.5 mm.



Considered defective

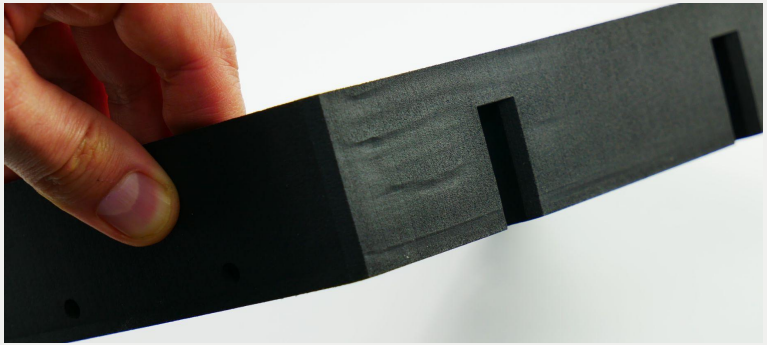
Considered defective

we reprint the item at our own expense and the deadline for order issuance is delayed.



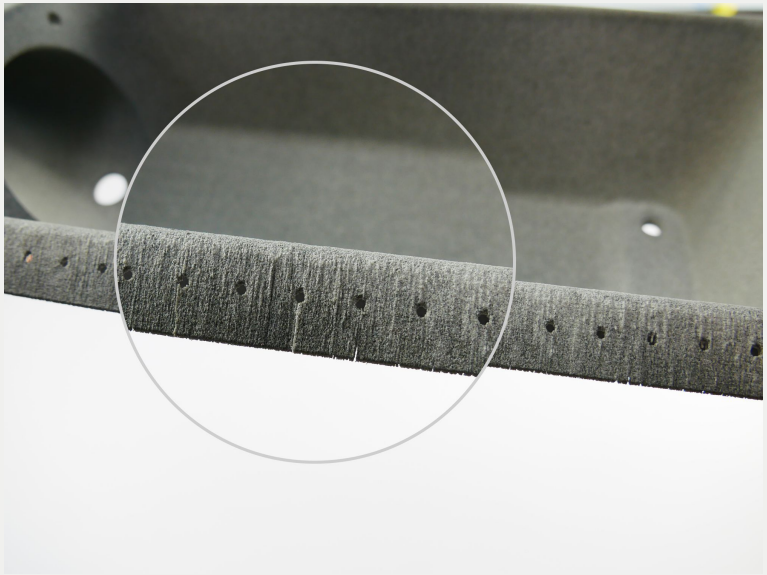
1. “Waves” on the surface

Considered defective



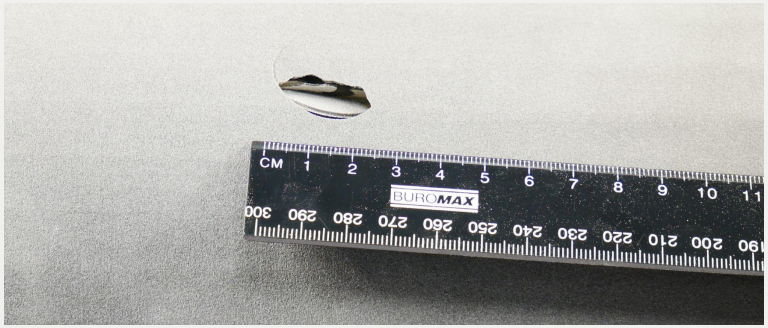
2. Unprinted areas.

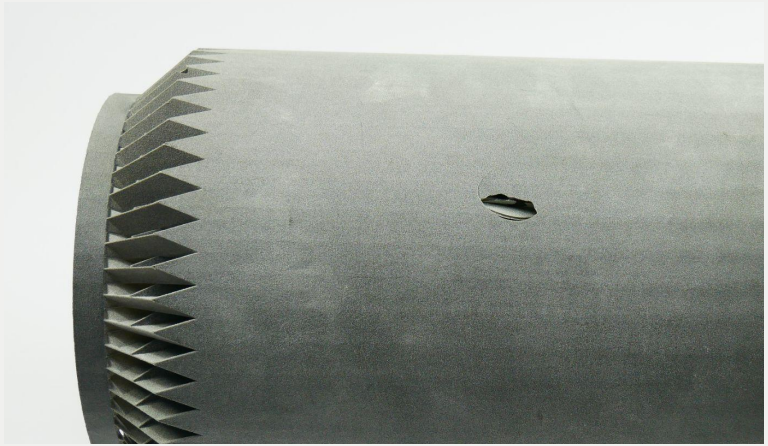
Considered defective



3. Parts bursting from pressure.

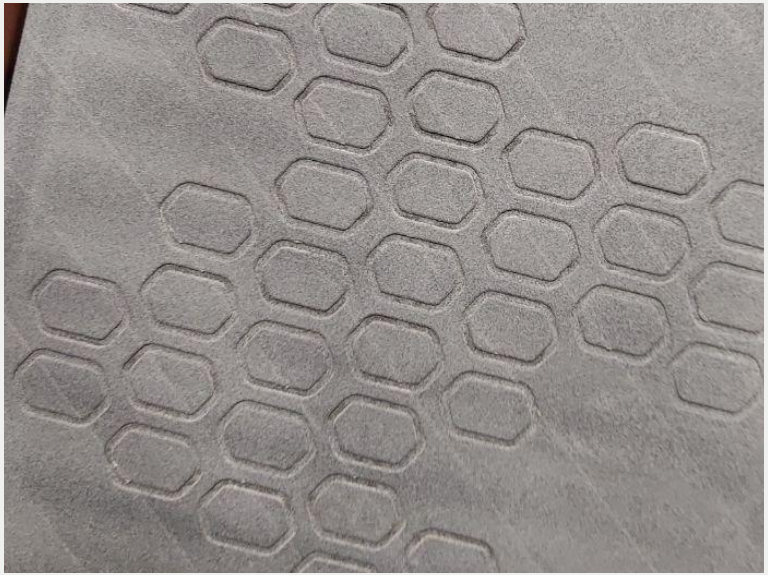
Considered defective





4. Deep streaks from the print head.

Considered defective

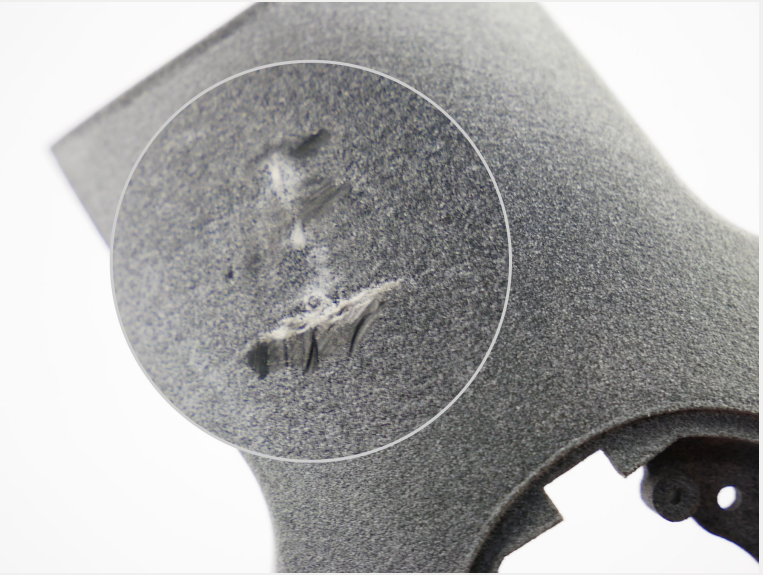


5. Deep cuts on the surface of finished items.

Considered defective

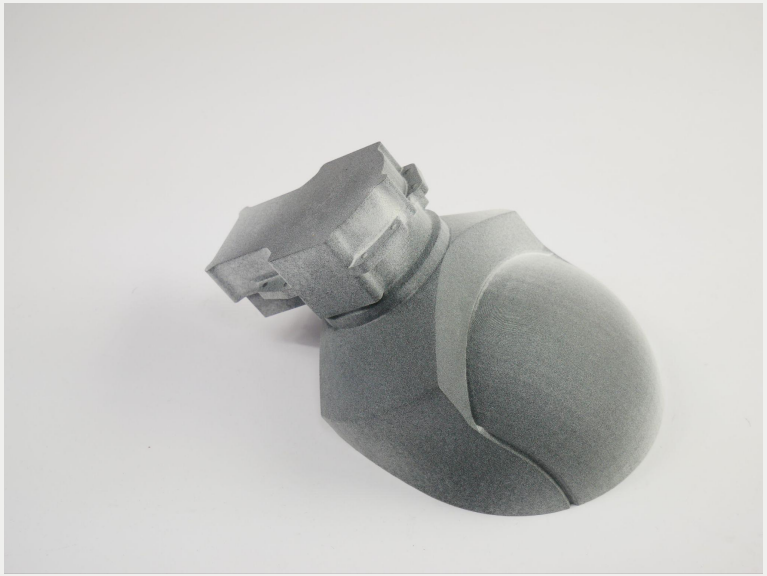
6. Significant scuff marks.

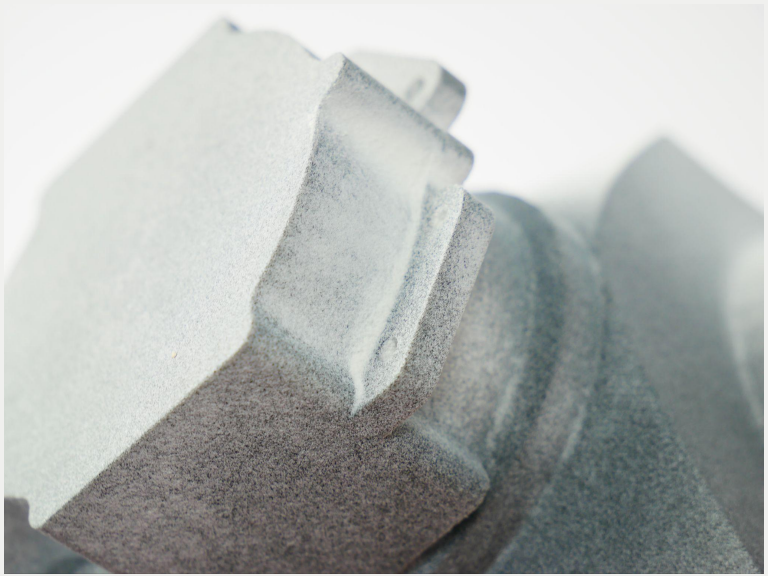
Considered defective



7. Sintered powder.

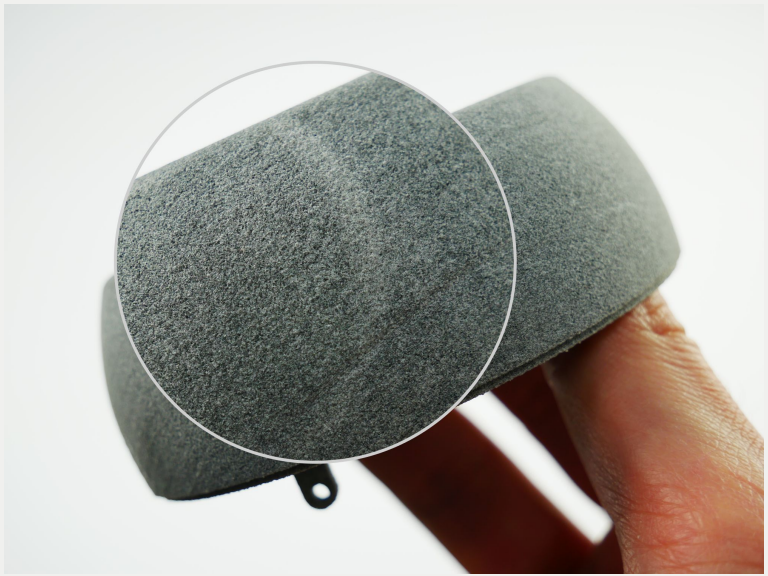
Considered defective





8. Different surface roughness on the same part.

Considered defective



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