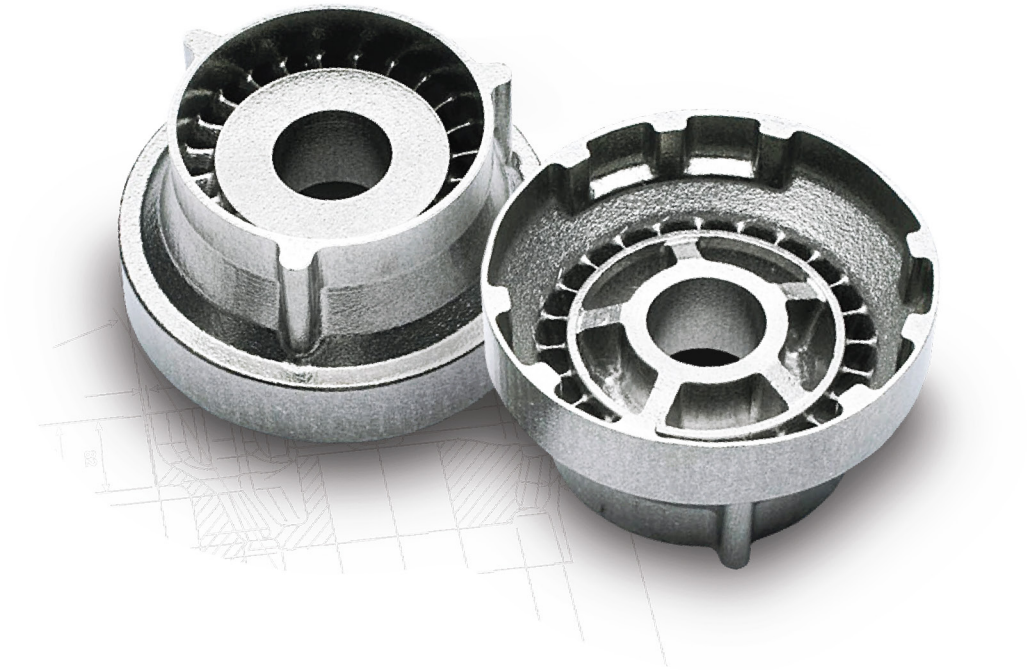
beamler

3D PRINTING.COM



Dummy
REPORT

1. Goal

{Company X} is interested in experimenting with 3D printing. For the production of a part, {Company X} is looking for a 3D material-printer combination that meets the requirements of the end product as much as possible.

The aim of the quick-scan is to find out which {Your question you have regarding 3D Printing}. The question in this dummy report is: Which printers and materials are most suitable to print a functional spare part for my machine?

In this QuickScan we looked at different criteria points:

- The final product must be able to withstand a pressure of 12 bar +
- The final product must be able to withstand temperatures of 200°C +
- The final product must be E-biocompatible
- The material must have an elongation break between 1000%-1250%

*An important note is that Beamler has received 3D Model from {Company X} that meets the criteria and that they have been tested with simulation software.

2. Bar pressure + Temperatures

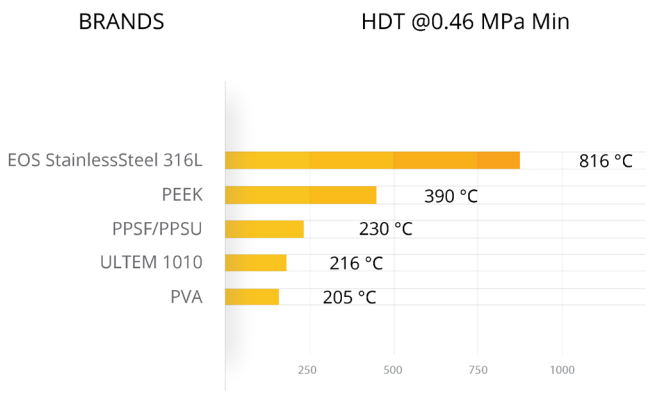
In this chapter we present a table that meets the following criteria: The final product must be able to withstand a pressure of 12 bar + and the end product must withstand temperatures of 150°C +. All screenshots of tables 1 and 2 from the Beamler database are shown in the appendix.

Beamler has selected the following materials properties:
- Minimal Density in g / cm3 (Density Min)
- Minimal Heat Deflection Temperature in °C at 1.8 MPa (HDT @ 1.8 MPa Min)
- Maximal Heat Deflection Temperature in °C at 1.8 MPa (HDT @ 1.8 MPa Max)

The heat distortion temperature (HDT, HDTUL or DTUL) is the temperature at which a polymer or plastic sample deforms under a specified load.
Gram per cubic centimeter is a density unit in the CGS system, often used in chemistry, defined as mass in grams divided by the volume in cubic centimeters.

Min HDT @1.8 MPa & Minimal Density

Table 1 indicates that 5 materials have an HDT above 200°C with a pressure of 4.6 bars. In addition, you can see that the EOS Stainless Steel 316L has the highest Density. This material is stainless steel.



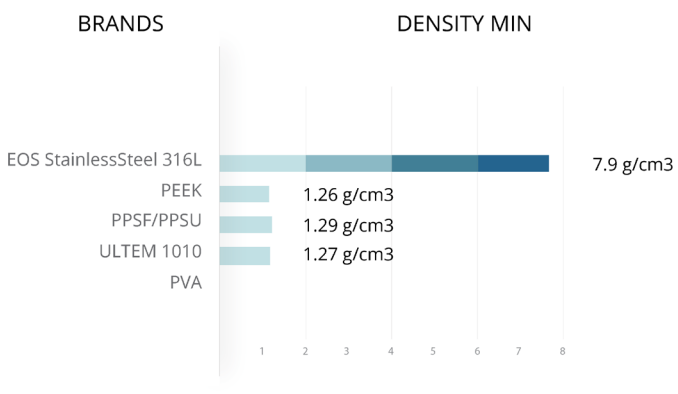


Table 1

Max HDT @1.8 MPa & Minimal Density

Table 2 shows 1 material having an HDT above 200 ° C with a pressure of 4.6 bars. This is High Temp Resin.

	BRAND	DENSITY MIN	HDT @0.46 MPa Min
1.	High Temp Resin	7.9 g/cm3	289 °C

Table 2

Min HDT @1.8 MPa & Minimal Density

Table 3 indicates that 15 materials have an HDT of above 200 ° C with a pressure of 18 bars.

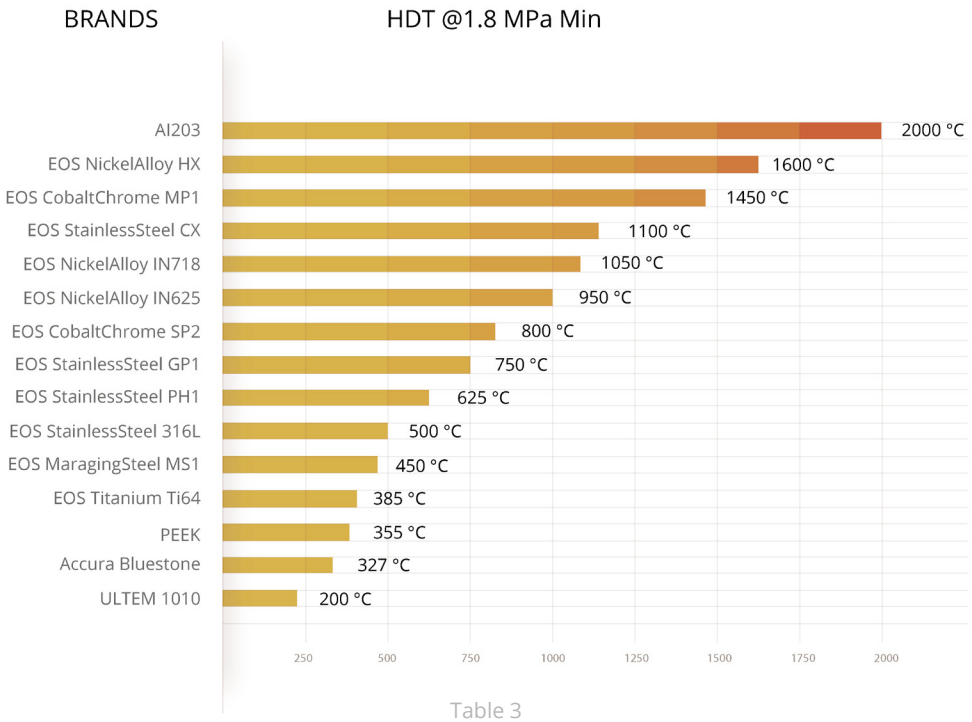


Table 3

In addition, you can see that the AI203 material has the highest Density. The AI203 is ceramic.

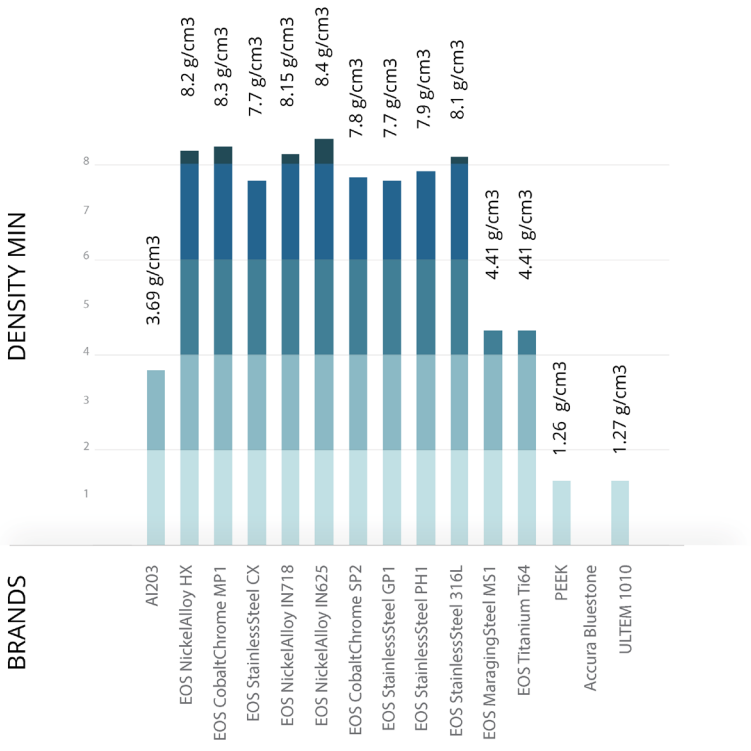


Table 4

3. E-biocompatible and Heat-resistant

Biocompatibility is related to the behaviour of biomaterials in various contexts. The term refers to the ability of a material to perform with an appropriate host response in a specific situation. The ambiguity of the term reflects the ongoing development of insights into how biomaterials interact with the human body and eventually how those interactions determine the clinical success of a medical device (such as pacemaker, hip replacement or stent)

Beamler has selected the following materials properties:
- E-biocompatible
- Heat-resistant

E-biocompatible and Heat-resistant

We found 94 3D Printers with a minimum layer of 0.04 or better. In table 5 you can see the top 8 3D printers with the best minimal layer height.

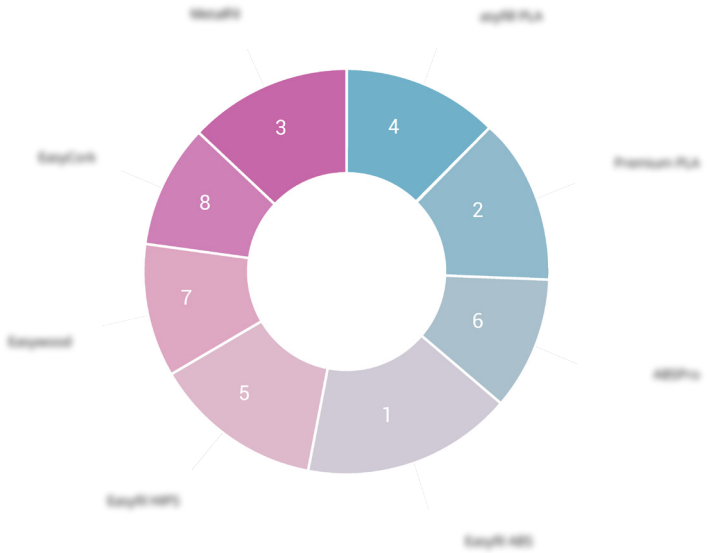


Table 5

4. Elongation Break

Elongation at break, also known as fracture strain, is the ratio between changed length and initial length after breakage of the test specimen. It expresses the capability of a material to resist changes of shape without crack formation.In The material must have an elongation break between 1000%-1250%

Beamler has selected the following materials properties (Table 6):

- Elongation break min.
- Elongation break max.

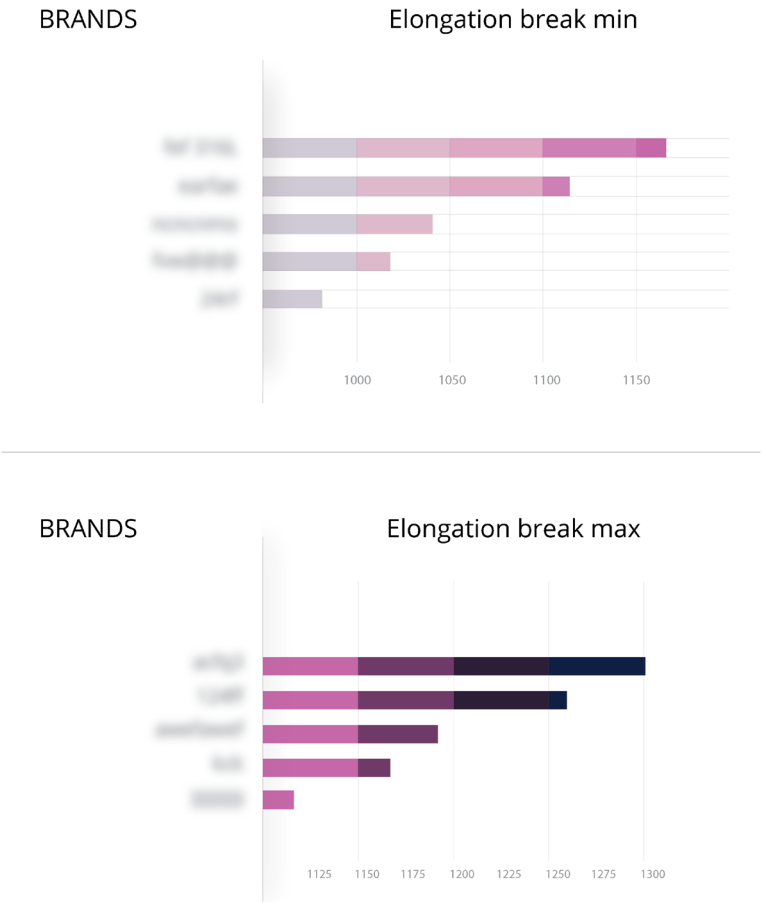


Table 6

5. Conclusion

In this chapter we show the results: {Your question you have regarding 3D Printing}
Looked at in this QuickScan is the different criteria points. Below a conclusion per criteria:

Bar Pressure + Temperatures
There are 8 materials that are above 150 ° C with a pressure of 4.6 bars. The EOS Stainless Steel 316L has the highest Density. There are 15 materials that can exceed 200 ° C with a pressure of 18 bars. The Al203 (ceramic) material is the highest Density.

E-biocompatible
The model can not be printed on 9 SLA 3D printer because of too small bedsize. The model does not need support when choosing an FDM technology.

Elongation break
94 3D Printers were found with a minimal layer of 0.04 or better. Table 5 shows the top 10 3D printers with the best minimum layer height.

Our advise to you is to: