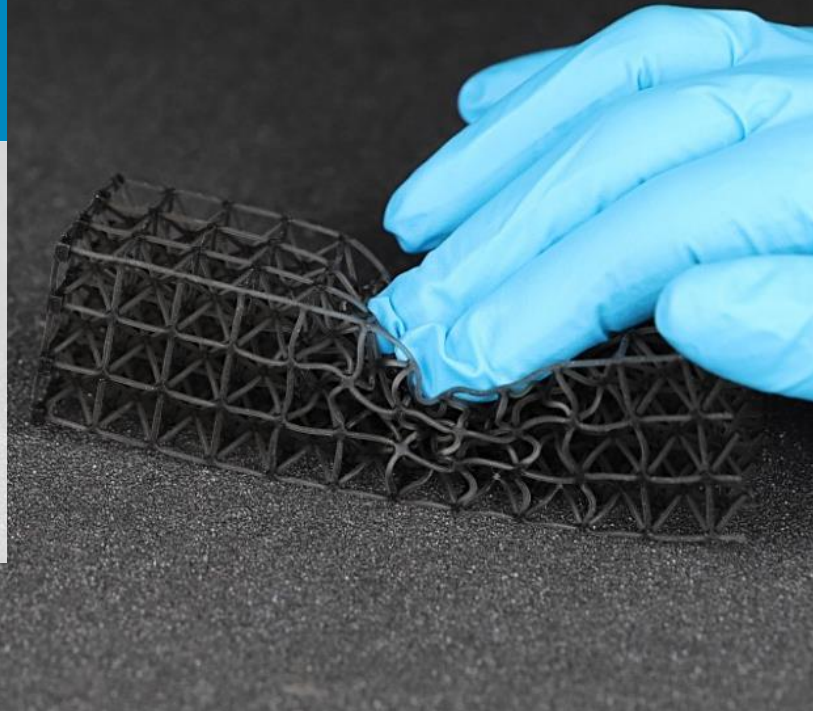


Printing Evaluation of Ultracur3D[®] Resins

User Guideline

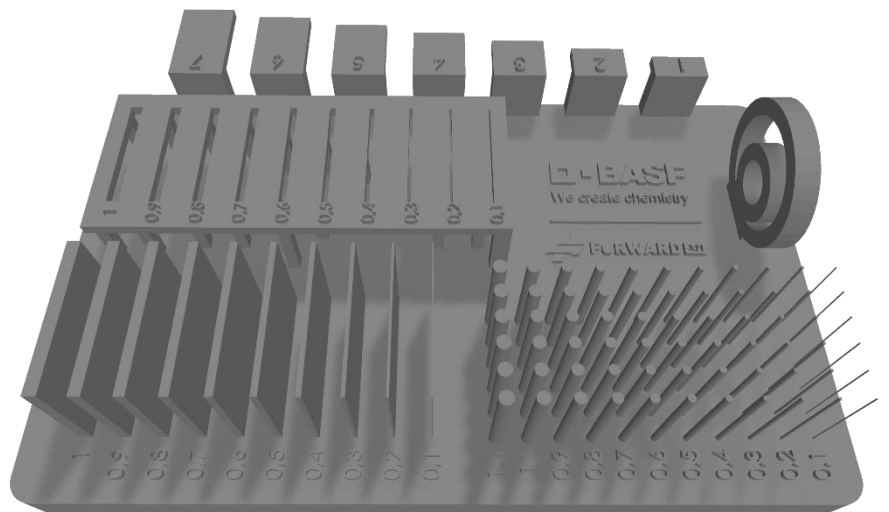


DESCRIPTION

The combination of 3D printer and the material has a huge impact on the quality of the parts produced. Every material performs slightly different on different printer models. This refers to the mechanical properties of the material in green state as well as its design characteristics.

When it comes to the printability of a material, this applies to the details and design characteristics that can be obtained. For this study the following details have been considered:

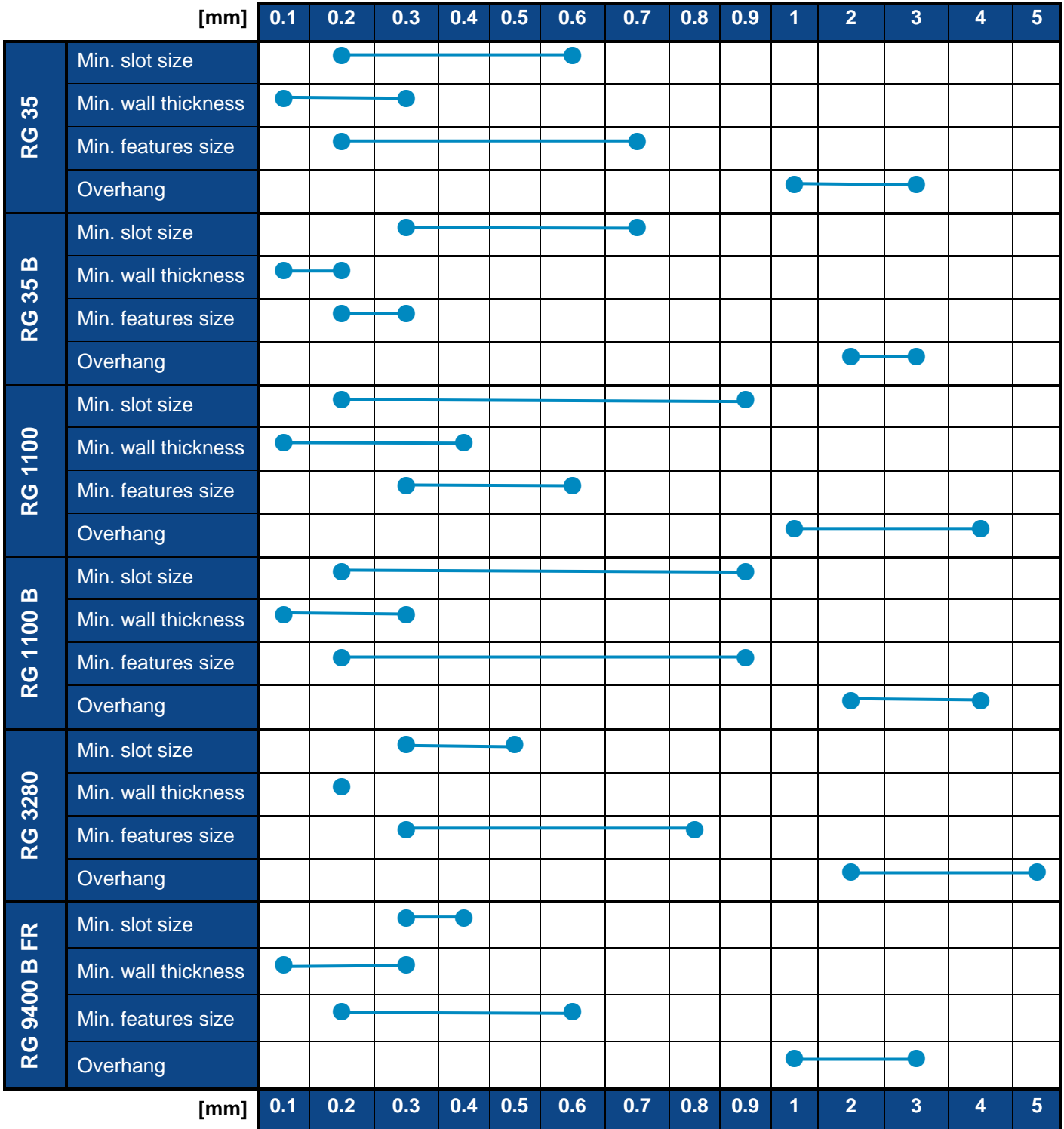
- Slot size
- Wall thickness
- Features size
- Overhang



“Pangaea” STL file by BASF Forward AM

The “Pangaea” STL file by BASF Forward AM is specifically designed to measure the above mentioned details all at once.

The table below shows the range of achieved design characteristics of the same material printed on over 10 different 3D printers. The printers differentiate from each other with respect to type of light sources, wavelength, and power of the light sources. The table below shows the ranges of printing details for Tough (ST line) and Rigid (RG line) Ultracur3D® resins.



		[mm]													
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	2	3	4	5
ST 45	Min. slot size		●	—	—	—	—	—	—	—	—	—	—	—	●
	Min. wall thickness	●	—	—	—	—	●	—	—	—	—	—	—	—	—
	Min. features size		●	—	—	—	—	—	●	—	—	—	—	—	—
	Overhang										●	—	—	—	●
ST 45 B	Min. slot size		●	—	—	—	●	—	—	—	—	—	—	—	—
	Min. wall thickness	●	—	—	—	●	—	—	—	—	—	—	—	—	—
	Min. features size	●	—	—	—	—	—	●	—	—	—	—	—	—	—
	Overhang										●	—	—	●	—
ST 7500 G	Min. slot size			●	—	—	●	—	—	—	—	—	—	—	—
	Min. wall thickness	●	—	●	—	—	—	—	—	—	—	—	—	—	—
	Min. features size		●	—	—	●	—	—	—	—	—	—	—	—	—
	Overhang										●	—	—	●	—
		[mm]													
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	2	3	4	5

PRINTING SPEED

The printing speed is also an aspect that depends on the machine you print on. There are many factors that affect this parameter. Assuming that all parts use the same layer height, it is necessary to consider, among others, the power of the light source, the exposure time and the separation speed of the building platform.

It can be concluded that there are faster and slower machines. The following table shows the range of printing speeds for each of the scenarios presented before.

