Which 3D Printer is Best for my part?

Depending on the geometry of a part, its application, and its environment a particular 3D printer or material may be desirable to use due to its properties. While many different printers may work for a particular job, selecting the wrong printer may lead to drastically overpaying or overbuilding a part for its application. On the other hand using the wrong printer and material could lead to part warping due to moisture after instillation, or even print failure due to material geometry confliction. Selecting the right printer and material can go a long way to creating successful, long lasting parts.

Ultimaker

The Ultimaker printers are FDM filament fed 3D printers. Each has two extruders set up with build and support material with a tip width of .25,.4,.6 and .8 mm available. Layer lines are visible with this printer with slice heights of 60-200 micron, and this printer can print variable infill from 10% to 100%.

Default material: ABS (orange) & PVA (dissolvable)

Pros:

- Many material choices
  - ABS
  - PLA
  - PVA (dissolvable support)
  - nylon
  - CPE
  - Flexable
- Cheep and easy to run printer
- Easy to switch filaments
- Capable of creating large overhangs with less support filament (tree support)
- Highest chance of print failure

Cons:

- Requires post processing
- Susceptible to warping due to moisture

F270

The F270 is also a duel extruder FDM filament fed printer typically set up with build and support material. Layer lines are visible with variable slice height from 127-330 micron. Variable infill from 10%-100% is available.

Default material: ABS (blue) & SQR (support)

Pros:

- Quick easy printing resulting in fast turn around time
- Capable of printing the largest prints (305×254 mm)

Cons:

- Difficult to switch filament
- Requires NaOH post process bath to remove support material

Form 2

The Form 2 printer is a SLA resin printer capable of very high precision. USing UV light to cure the resin bath, layer lines are less pronounced with slice heights from 25-100 or 50-100 (durable & tough) micron depending on the resin.

Default material: NA

Pros:

- Many material choices
    - Clear
    - White
    - Durable
    - Tough
    - Flexable
    - Black
- Able to produce optically clear parts
- Able to produce sharp points/thin risers

Cons:

- Chance of print failure if positioned incorrectly
- Requires post processing to remove supports
- Can develop slight warping on thin parts during curing

Objet

Default material: RGD450 & support

Pros:

- Able to produce smooth high quality surface finish (not on overhangs)
- Requires very little post processing
- Low chance of print failure

Cons:

- Highest material cost of all printers

- Slow printing time
- Pressure wash required to remove support material

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