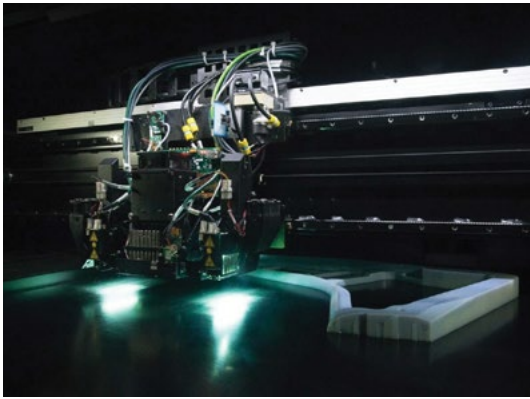


Material Jetting (PolyJet)



Material Jetting works in a similar way to standard inkjet printing. However, instead of printing a single layer of ink on a piece of paper, multiple layers of material are deposited upon each other to create a solid part. Multiple print heads jet hundreds of tiny droplets of photo-polymer onto the build platform, which are then solidified (cured) by the UV light source.

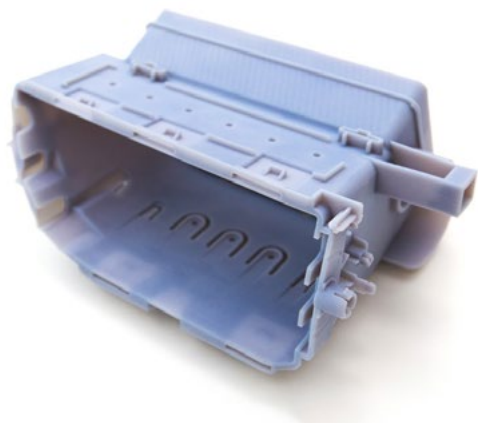
After a layer is complete, the build platform moves down one layer and the process repeats. Support structures are always required in Material Jetting. A water-soluble material is used as support that can be easily dissolved during post-processing and that is printed at the same time as the structural material.

Material Jetting is the most precise 3D printing technology (with SLA/DLP being a close second). It is one of the few 3D printing processes that offers multi-material and full-color printing capabilities.

Material Jetted parts have a very smooth surface - comparable to injection molding - and very high dimensional accuracy, making them ideal for realistic prototypes and parts that need an excellent visual appearance. Material Jetting is one of the most expensive 3D printing processes and this high cost may make it financially unviable for some applications. Moreover, parts produced with Material Jetting are not best suited for functional applications.

Like SLA/DLP, the materials used with this process are thermosets, so the produced parts tend to be brittle. They are also photosensitive and their properties will degrade over time with exposure to sunlight.

[Learn more about the Material Jetting process →](#)



Popular Materials Jetting materials

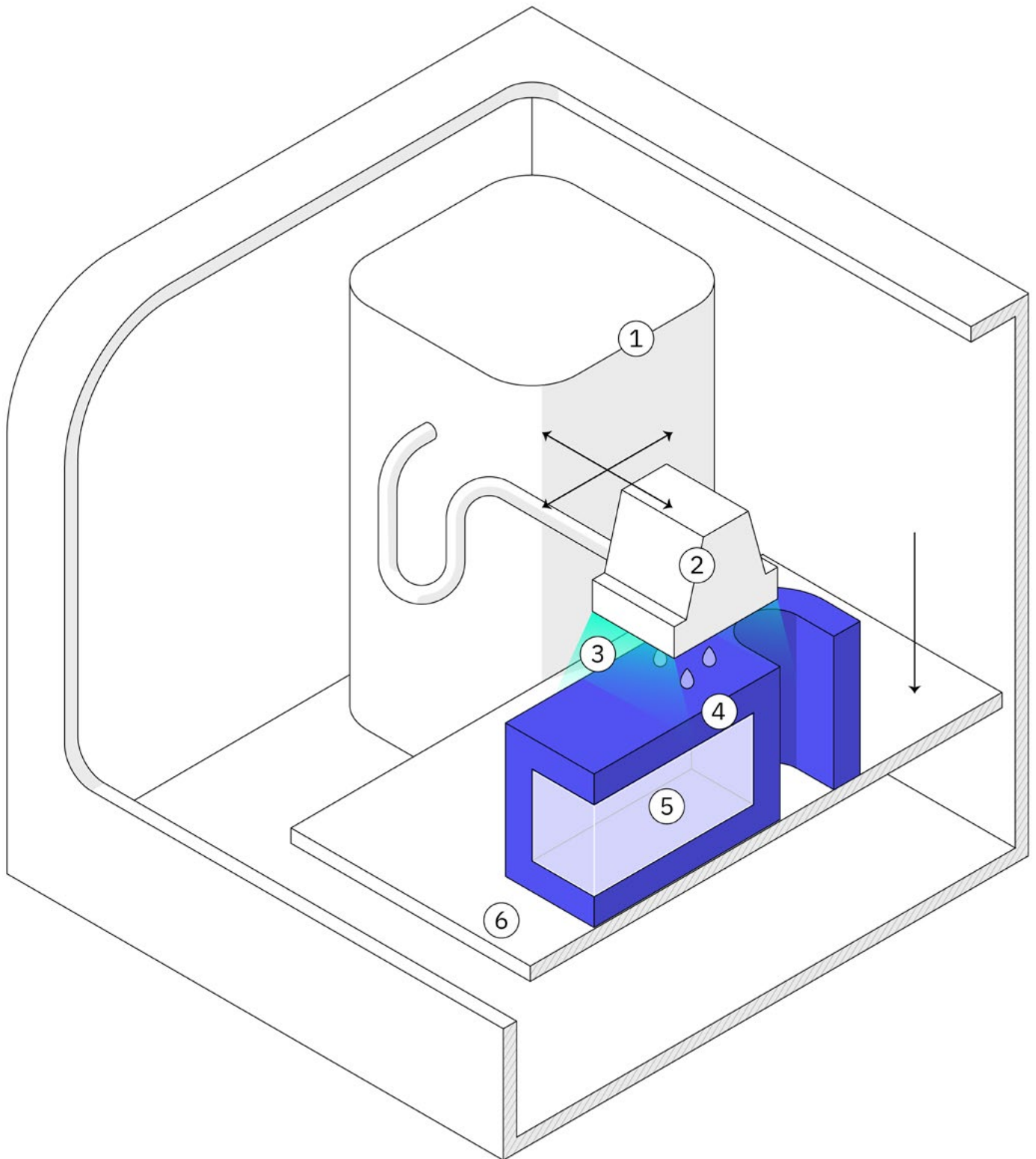
Material Jetting produces parts of the highest dimensional accuracy with a very smooth surface finish, used for both visual prototypes and tooling manufacturing.

> Standard

> Digital ABS

> Transparent

> Rubber-like



- | | |
|----------------------|---------------------|
| ① Material container | ④ Printed part |
| ② Inkjet print head | ⑤ Support structure |
| ③ UV curing light | ⑥ Building platform |

Pros

- + High accuracy & very fine detail
- + Injection molding-like finish
- + Multi-material & full-color capabilities

Cons

- The most expensive plastic 3D printing process
- Mechanical properties degrade over time
- Produces relatively brittle parts