WHAT IS FDM?

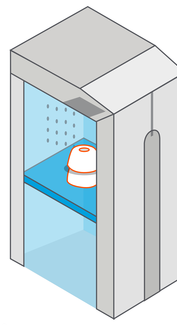
FDM® (Fused Deposition Modeling) 3D printing offers fast lead times and design freedom coupled with strong thermoplastics. FDM utilizes real, engineering-grade materials like ABS and Polycarbonate with unique properties.

7x
FDM is the most widely used AM technology, representing 3x of the market vs. resin printers & 7x vs. powder-based technologies.

90%
weight savings
TS Tech saw significant weight savings by replacing an aluminum fixture with an FDM/aluminum hybrid fixture.

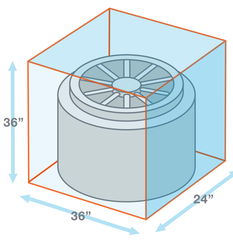
FDM part resolution & wall thicknesses

Slice thickness	Minimum wall
0.005" (0.127 mm)	0.016" (0.41 mm)
0.007" (0.18 mm)	0.024" (0.61 mm)
0.010" (0.25 mm)	0.032" (0.81 mm)
0.013" (0.33 mm)	0.036" (0.91 mm)
0.020" (0.508 mm)	0.070" (1.78 mm)



How FDM works

- 3D CAD data is uploaded to the machine
- Dual heated nozzles trace each layer & deposit thermoplastic
- Support structures are added to free-floating features
- After each layer, the build platform lowers & process repeats
- Completed parts are removed from build platform



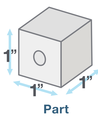
FDM build volume

Single, un-bonded parts can be built as large as 36" x 24" x 36", however, parts are not limited to these dimensions. Parts as large as cars have been built by building them in sections and bonding them together.

FDM economies of scale

Example illustration

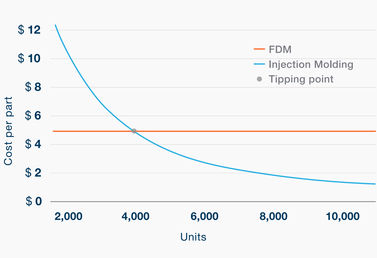
The tipping point between FDM and Injection Molding is 4,000 units



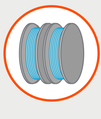
Part

Injection Molding	FDM
Cost per part $1.25	Cost per part $5*
Tool cost $15,000	Tool cost —

*When building at full pack density



Benefits of FDM



Material diversity

FDM offers a wide range of durable materials ideal for applications requiring specialized properties, like electrostatic dissipation, biocompatibility and FST ratings. Engineering-grade thermoplastics like ABS and ULTEM™ resin are ready for demanding applications.

Production capability

FDM has proven to be ideal for building durable, stable production parts in low quantities. Complex features, undercuts, and internal features are not a problem when using FDM to create your parts.

Sparse fill builds

Sparse fill means less material built into the part, so the weight of the final part is significantly reduced. The reduction in material and faster print time contributes to a cheaper overall part.

Being a part of the family that invented FDM technology means Stratasys Direct is backed by Stratasys®' strong commitment to R&D. We house the largest in-house FDM capacity in North America, meaning for small or large projects, delivery will be quick.

Stratasys DIRECT MANUFACTURING

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