prototypeprojects
3D MADE. SIMPLE.®

PROTOTYPE PROJECTS PROCESS GUIDE

Fused Deposition Modelling (FDM)

Fused Deposition Modelling, or FDM, creates plastic parts that are robust and accurate, even when the part geometry is complex.

FDM builds durable prototype parts for concept models, visual models and functional prototypes.

What is FDM?

Typically, FDM produces parts that will ultimately be injection moulded from engineering plastics. Our customers request FDM when they are developing products such as medical devices, electronic components and precision instruments.

The comparatively low cost per part makes FDM feasible for producing small batches of prototype parts for functional testing.

A thermoplastic is heated and extruded through a nozzle, the movement of which is computer-controlled to place the material where it is needed. FDM is a lower-cost technology than SLA and SLS, but not as quick.

FDM characteristics

Using our Stratasys F170 3D Printer and ABS-M30 material, parts have good accuracy, strength and rigidity, as well as long-term dimensional stability, UV stability, thermal resistance and water resistance. As printed, the parts may have a ridged surface but they can be readily sanded, primed and painted for a better aesthetic.

ABS-M30 is up to 70% stronger than standard ABS, with greater tensile, impact and flexural strength. Parts are also smoother, have better feature detail, and can be printed in a maximum of six colours.

Furthermore, layer-to-layer bonds are significantly stronger than for standard ABS, resulting in better isotropy and more durable parts.

Although FDM parts are slightly porous, surfaces can be sealed by lacquering.

FDM process summary

Process features

- Ideal for small runs of prototype parts for functional testing
- Short lead times - depending on complexity - from CAD to finished part, but slower than SLA
- Cost effective
- Small numbers of parts
- Complex 3D geometries

Properties

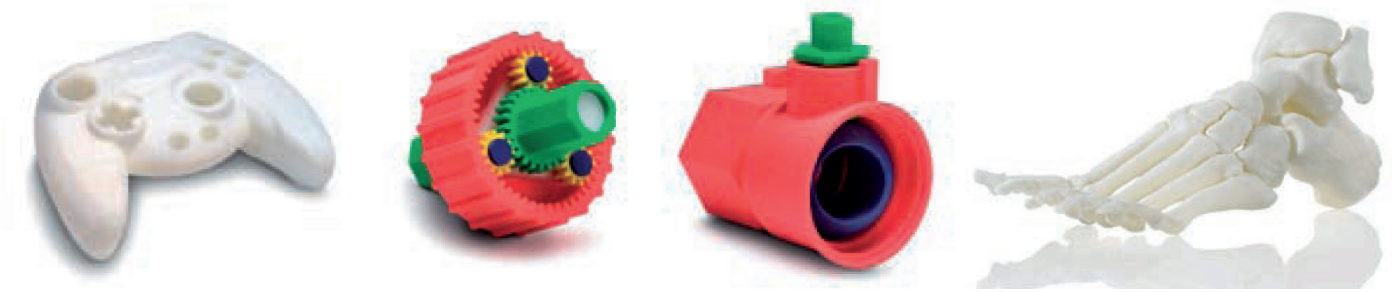
- Heat resistance
- Strength
- Rigidity
- Stability
- Surface may be ridged
- Can be hand finished for painting

Materials

- ASA

Pre-production applications

- Functional testing



About Prototype Projects

We are an expert prototyping bureau providing rapid prototyping and model making services for clients across a range of sectors.

Established in 1980, we have built a reputation for service excellence. We aim to help our clients build and maintain a strong competitive edge in engineering design and production.

Underpinning our commitment to excellence and service quality is an ongoing process of investment in prototyping systems, expertise and technologies.

Our service capabilities include:

- SLA (Stereolithography)
- SLS (Selective Laser Sintering)
- FDM (Fused Deposition Modelling)
- PolyJet
- DLP (Digital Light Projection)
- Vacuum Casting
- CNC Machining
- CNC Milling (4 Axis) & Turning
- Laser Cutting