



## What is Direct Fusing Technology with ABS material?

Answer: 3D printing process with ABS also well-known as Fused Deposition Modeling is layered manufacturing process. This process offers functional prototypes with ABS, and other materials like PLA. A thin bead of molten plastic is extruded through the computer controlled nozzle, which is deposited on a layer-by-layer basis to construct a prototype directly from 3D CAD data. The technology is commonly applied to form, fit and function analysis and concept visualisation. In addition, This process can be used for pattern generation and rapid manufacturing.

### Advantages:

**This 3D printing process with ABS material provided** parts are strong and rigid makes them suitable for functional testing

**Cost effective** solution for small to medium size parts in shortest lead time

**Dimensional stability** is a key advantage of direct fusing prototypes, as opposed to SLA.

**Environmental exposure** does not alter the size of the part or its features.

**ABS prototypes** demonstrate 80% of the strength of injection moulded ABS which make them very suitable for functional testing and can be directly used as finished production parts for certain applications.

**Ideal** for strong parts exposed to temperature, water and many chemicals.

**High level of finish** can be achieved by sanding and other post processing techniques.

**ABS parts** can be further machined, polished or electroplated.

### Disadvantages:

**ABS parts** have a ribbed appearance because of plastic is extruded in horizontal layers, which can be easily sanded and polished to smooth finish.

**Extensive snap and living hinge features** could fail due to process and material limitations.

**This 3D printing process** could be a slower process for very large build volume parts subject to part complexity and shape. Thin wall and shell parts are faster to make than solid builds.

### Build Size:

230mmx 265mmx 240 mm ( 9 x10.5x10 inches) XYZ built platform

Large parts can be easily made in sections and joined together

### Feature Size:

Minimum wall section or feature is recommended not to be smaller than 0.8mm. If you have any Ribs, Bosses, Lettering or wall sections less than recommend size, may not form at all.



### Layer Thickness:

Generally ABS parts are made with 125 MICRON layer thickness.  
WITH 3 PRINT MODE (SOLID, LIGHT, STRONG)

### Price Factor:

Cost effective for shell structured parts rather having thick and solid build volume. Very attractive pricing for hand held to medium size parts.

### Materials:

Please check:: **ABS Material**

### How FDM Works:

#### 3D PRINTING PROCESS: FILM TRANSFER IMAGING ( FTI) & MULTIJET MODELING

What is FTI/ Multijet Imaging process involving Photopolymer Resins ( acrylic base material)

3D printing process with photopolymer Resin ( FTI materials) is a process wherein molten resin are injected through a DOD based nozzle arrays and are cured by UV lights enabling to print the layers with excellent surface finish and offering comparable strength and rigidity and adaptability to various usages.

### Advantages :

Affordable 3D Plastic printer with Resin offering

- Multiple Colour choices, durable plastic for creating moulds from One master
- Hard Plastic comparable with ABS, ideal for Consumer products, construction, Engineering, Animation, Automobile, Electrical/Electronics goods, Footwear and many other industries
- 1 to 30 parts in 6 hrs. No penalty for adding multiple material
- Fast printing of 12 mm per hour.
- Much better smooth surface around curves and rounded edges

No stair stepping like FDM, BETTER QUALITY

### Disadvantages:

The models made with the resins are not as strong compare to ABS. The process is slower for single piece building



### Build Size:

230mmx 171mm x 200 mm ( 6.75 x 9 x 8 inches) XYZ built platform  
Large parts can be easily made in sections and joined together

### Feature Size:

Minimum wall section or feature is recommended not to be smaller than 0.65mm.

### Layer Thickness:

Layer thickness 0.004 inches/ 100 micron layer thickness

### Price Factor:

Cost effective for shell structured parts rather having thick and solid build volume. Very attractive pricing for hand held to medium size parts.

### Materials:

Please check:: Photopolymer Resin

### MATERIAL COMPARASION:

	ABS	FTI- Photo polymer
Tensile Strength ( 0- 100)	35 Mpa – ABS	20 Mpa – FTI
Tensile Modulus ( 0k-5k)	2480 Mpa	900 Mpa
Flexural Modulus ( 0k-5k)	2618 Mpa	900 Mpa
Impact Strength ( 0-250J/m)	100 J/m	48 J/m
Hardness ( Shore D) 0-100D	78D	65 D

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