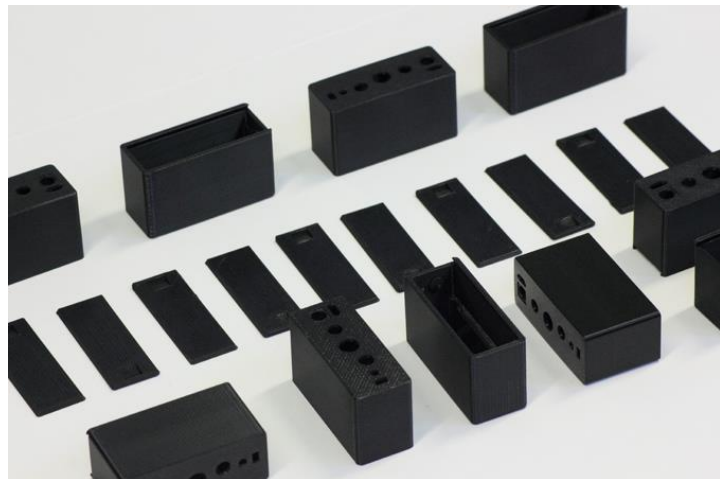


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# 3D Printing for Static Sensitive Applications

EMC and Thermal Management  
Solutions



## Fothershield

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## 3D PRINTING FOR STATIC SENSITIVE APPLICATIONS



Fothershield's 3D printing service is perfect for producing rapid prototype tooling, jigs, for testing designs before committing to expensive metal tooling, and for low production runs.

Once you have your 3D design in STL format send this to us for a quotation. An STL file is usually generated by a computer aided design (CAD) program and is the most commonly used file format for 3D printing. You can email your design, but if it is a large file (8MB or over) please contact us to see how best to deliver the file to us safely.

Our standard production grade for 3D printing is an acrylonitrile butadiene styrene (ABS) static dissipative grade ABS-ESD7, however we can print in any standard material including ABS, Polycarbonate, Nylon 12, Carbon, Graphite, Flexible Polypropylenes, Rubbers/Silicone, and Metals such as Aluminium, Titanium and Copper.

Our electromagnetic interference (EMI) shielding coating spraying service may also be used to paint the inside of your 3D printed enclosure in carbon, nickel, copper silver or silver paint.

### ABS-ESD7

Static build up and its ultimate discharge can cause catastrophic damage to sensitive electronic devices and even cause explosions in atmospheres such as flour mills, coal mines, and oil/gas refineries.

The ABS-ESD7 grade of material is a static dissipative ABS thermoplastic and is printed using the fused deposition modelling (FDM) process, which extrudes the material from the nozzle of the printer forming layers. FDM uses production grade thermoplastics producing strong and stable parts, giving up to 80% of the mechanical strength when compared to an injection moulded part.

ABS-ESD7 is an ideal material for the production of a variety of parts for use in the electronics industry, where static build up is to be avoided, such as anti-static containers, jigs/tools, and products to be used in ATEX (equipment and systems intended for use in potentially explosive atmospheres) handling areas, where there is a high risk of explosion.

For products used in commercially sensitive areas, we are more than happy to finalise and agree appropriate non-disclosure agreements.

## Features

- Permanently static dissipative
- Lightly textured finish
- Print layer 254 micron
- Recommended wall thickness 1mm
- Heat deflection 96°C
- Maximum size 406mm x 355mm x 406mm
- Colour – black

## Mechanical Properties

Mechanical Properties	Test Method	Value
Tensile Strength	ASTM D638	36 MPa
Tensile Modulus	ASTM D638	2,400 MPa
Tensile Elongation	ASTM D638	3%
Flexural Strength	ASTM D790	61 MPa
Flexural Modulus	ASTM D790	2,400 MPa
IZOD Impact Notched	ASTM D256	28 J/m
IZOD Impact Un-notched	ASTM D256	55 J/m

\*Build orientation on side long edge

## Thermal Properties

Thermal Properties	Test Method	Value
Heat Deflection (HDT) @ 66 psi	ASTM D648	96°C
Heat Deflection (HDT) @ 264 psi	ASTM D648	82°C
Vicat Softening Temperature (Rate B/50)	ASTM D1525	99°C
Glass Transition (Tg)	DSC (SSYS)	108°C
Coefficient of Thermal Expansion flow	ASTM E831	8.82 <sup>5</sup> mm/mm/°C
Coefficient of Thermal Expansion xflo	ASTM E831	8.46 <sup>5</sup> mm/mm/°C
Melting Point	N/A	N/A

\*Literature value unless otherwise stated. Material does not display melting point due to its amorphous nature.

## Electrical Properties

Electrical Properties	Test Method	Value
Volume Resistivity	ASTM D257	3.0 x 10 <sup>9</sup> - 4.0 x 10 <sup>10</sup> ohm/cm
Surface Resistivity	ASTM D257	10 <sup>6</sup> - 10 <sup>9</sup> ohms

\*All values generated from the average of test plaques 102 x 102 x 2.5mm built in the flat and vertical orientations. The range of values is mostly resulting from the difference in properties of flat versus vertical orientations.

All technical data herein is accurate to the best of our knowledge based on our most up to date testing information and material specifications. This information is not presented as a warranty or guarantee and is not intended to be all inclusive as to conditions of use. The data herein represents typical properties and is not to be used as a basis for a specification.