

1- Zetamix General guidelines - Zetamix Epsilon

Zetamix filaments are based on a fine powder ($< 1.0 \mu\text{m}$) and a thermoplastic binder system for the FDM process.

The recommendations are considered to work as a standard guideline and must be adapted to individual wall-thickness and part-design.

Filament characteristics

Typical material properties			
	Zetamix $\epsilon = 2.2$	Zetamix $\epsilon = 4.5$	Zetamix $\epsilon = 7.5$
<i>Product</i>	Filaments for FDM process	Filaments for FDM process	Filaments for FDM process
<i>Binder basis</i>	Polyolefine based binder system	Polyolefine based binder system	Polyolefine based binder system
<i>Appearance</i>	Translucent white	Grey	Grey

Zetamix $\epsilon = 2.2$

Typical processing properties	
<i>Printing temperature</i>	270 – 300°C
<i>Plate temperature</i>	110°C
<i>Nozzle size</i>	0.4 mm 0.6 mm
<i>Layer thickness</i>	0.2
<i>Printing speed</i>	2.5 mm/s

Zetamix $\epsilon = 4.5$

Typical processing properties	
<i>Printing temperature</i>	270 – 300°C
<i>Plate temperature</i>	110°C
<i>Nozzle size</i>	0.4 mm 0.6 mm
<i>Layer thickness</i>	0.2
<i>Printing speed</i>	2.5 mm/s

Zetamix $\epsilon = 7.5$

Typical processing properties	
<i>Printing temperature</i>	270 – 300°C
<i>Plate temperature</i>	110°C
<i>Nozzle size</i>	0.4 mm 0.6 mm
<i>Layer thickness</i>	0.2

<i>Printing speed</i>	2.5 mm/s	
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Printing instructions:

It is preferable to use a driving gear which is not too much aggressive and will not crush the filament (ideally a grooved driving gear). The filament can be grinded by the extruder, that is why it should be cleaned before a long print. To make sure the printer is ready, it is recommended that you preheat the system and start extruding some material. If no filament comes out of the nozzle, there might be a clog. Therefore, the nozzle must be replaced or cleaned.

It is recommended to use a wear resistant nozzle, for instance with a ruby or a ceramic tip. It is also recommended that part be printed on a glass plate to obtain a good surface quality. The part can be detached from the build plate using an ultrasound bath.

Printing parameters: Refers to the IdeaMaker parameters guidelines

Printing speed: from 25 to 30 mm/s depending on the shape of the part

Layer height: from 0.3mm down to 0.1mm

Retraction: 1 mm at 5 mm/s

Fan speed: 100% (the higher the better the print quality)

Wall line count: at least two

Infill: any 2D pattern (triangles, grid, honeycomb, rectilinear)

Infill density: from 100% down to 5% (the top surface above the infill depends on the pattern infill density)

Top/bottom surface number:

- for a 0.1mm layer height: 10
- for a 0.2mm layer height: 5

Supports structure: Can be printed using the same material or a soluble material via a dual extrusion system. To ensure a great surface quality, at least 3 dense top layers should be printed between the support structure and the part.