Printing guidelines

GRANULE-Eco TiO_2

Printing guidelines

Always maintain the storage conditions listed in the datasheet. On reception of the granules, please ensure that they have not been exposed to moisture. If this is not the case, please contact our post-sales service immediately.

This appendix contains granule management instructions for a better printing experience and best quality results in your printed parts. The parameters and steps described below have been validated with different printers (brass nozzles, aluminum heating blocks) at a room temperature of 25°C. Lower temperatures will promote poor flow of the granules in the screw.

Generating the .gcode file

Proceed as follows to generate the slice of the part to be printed:

1. Preparation of the material profile. If you have a slicing software with the option to save the settings for the materials profile, it will allow the machine to calculate the quantities and times necessary for printing according to the real composition of the granules in later printings. **Consider the following key parameters as basics to include into the material profile:**

Density	1.60 g/cm^3
Granule size	1-3 mm
Printing temperature	160 - 170 °C
Stand-by temperature	30 °C lower than the used printing temperature or <140 °C
Hot Pad temperature	30 - 60 °C

2. Printer parameters. **Configure the slice with the following recommended parameters:**

Printing speed	20 - 50 mm/s
Head travel speed	< 150 mm/s
Nozzle diameter	≥ 0.4 mm
Layer Height	≥ 0.15 mm (*)
Build plate adhesion	The use of 1 or 2 skirts around the part allows the nozzle to be fully loaded. We recommend fixing these skirts to the same speed you have chosen to print.

** For 100% infill parts we recommend increasing the number of solid layers below and above the part, or increasing the shells until we get the required number of layers.*

To make several prints in a row, it is advisable to leave the head at 10ºC below the printing temperature or at the same temperature as the print to avoid clogging of the nozzle due to the repeated cooling and heating of the granules. In this case, it is highly recommended to include a line of code in the .gcode files of the prints that purges the head before starting to print.

Feeding the granules before printing

Warm the printer. Prior to printing, we recommend warming up the nozzle to the indicated printing temperature and using pellets to avoid clogging the nozzle with waste of any previous material used. Additionally, we recommend drying the granules at 40-60°C for 30 minutes before feeding.

Enable cold extrusion. COLFEED4Print materials require printing temperatures below the safety minimum temperature of most commercial printers. To overcome this feature in printers which firmware is based on Marlin, it is necessary to send a code line with the "M302" command to enable cold extrusion. If the machine used has its own firmware, you may want to contact your printer's technical service before feeding the material to ensure you can achieve the printing temperature conditions.

NEVER FEED THE GRANULES AT TEMPERATURES HIGHER THAN THE PRINTING TEMPERATURE AS THIS MAY DEGRADE THE MATERIAL AND CAUSE CLOGGING OF THE NOZZLE AND BARREL.

Launch the .gcode for printing

Once the granules have been fed at the printing temperature and the nozzle has been loaded, start printing the parts avoiding delays larger than 1 minute. More time could induce a heterogeneous flow at the beginning of the printing process.

Depending on the type of printing bed, we recommend the use of a low adhesion lacquer commonly used for PLA prints. This will be sufficient to avoid warping of the printed parts.

Disclaimer: The technical information contained in this data sheet has been obtained by laboratory characterization and should be treated as a reference. Any description, data or printing recommendations given in this document may change without prior information and do not constitute the agreed contractual quality of the product. Printing conditions may vary depending on the 3D printer model used and part printed. Due to the numerous factors that may affect the data shown, we make no warranty of any kind, express or implied, as to the properties of the product or its suitability for a particular use.