PET

Grade coding

Addigy® F3040 strong and rigid 3D printing grade based on PET.

Material handling

Storage

In order to prevent moisture pick up and contamination, supplied packaging should be kept closed and undamaged. For the same reason, partially used bags should be sealed before re-storage. Allow the material that has been stored elsewhere to adapt to the temperature in the processing room while keeping the bag closed.

Packaging

Addigy® F3040 grades are supplied in airtight, moisture-proof packaging.

Moisture content as delivered

Addigy® F3040 grades are packaged at a moisture level <0.05 w%.

Conditioning before printing

To prevent moisture condensing on filaments, bring cold filaments up to ambient temperature in the print shop while keeping the packaging close.

Drying

In case the filament has become wet, it should be dried. Using a hot air oven at 80° C for at least 4h is recommended. When storing the filament after printing, it is advised to seal the bag and add silica gel to the bag to keep the filament as dry as possible.

Machinery settings

Common fused filament fabrication (FFF) equipment should work with **Addigy®** filaments, direct drive as well as Bowden type extruders. Typical settings for any slicing software (e.g. Slic3R, Cura, Simplify3D) are listed below. Note that for different nozzle diameters the settings should be changed accordingly.

Nozzle diameter: 0.4 mm
Filament diameter: 2.85 mm, 1.75 mm

Print Speed:

50–100 mm/s (obeying the maximal throughput in cm^3/s of the extruder)

Extrusion width:

0.4 mm (or at least equal to nozzle diameter)

Layer Height:

Layers: 0.1–0.2 mm
First layer: 100–150% of first layer thickness

Extrusion temperatures:

Extruder: 270°C/518°F

Addigy® F3040 can be used with a range of nozzle temperature (265–285°C/509–545°F). Preferred temperature to print your object is 270°C/518°F. To generate a homogeneous melt, the melt temperature should always be above 265°C/ 509°F. Optimal mechanical properties will be achieved at melt temperature between (270–280°C/518–536°F).

Bed Temperature:

Build plate temperature setting: 60–100°C/140–212°F

Note: Prior to removing the printed part from the bed, the bed temperature should be lowered to ambient to avoid severe deformation of the part.

General processing settings

Build plate adhesion

For the best adhesion with **Addigy® F3040** it is advised to use an adhesive promotor, e.g. glue-stick or 3D-Lac®. Prior to applying an adhesive promotor, any surface must be free of dirt and grease. Therefore cleaning with ethanol or acetone is recommended.

Safety

For the safety properties of the material, please refer to our SDS which can be ordered at our sales offices. During practical operation wear personal safety protections for hand/eye/body.

Startup/shut down

Production has to be started with a clean machine. Starting the machine, extrude at least 50 mm of new filament through the nozzle. After printing with **Addigy® F3040**, purge the printer with PLA or PETG.

Remove the filament from the machine before shutting down your printer.

Production breaks

At restart after production interruptions exceeding a few minutes, purge the nozzle adequately.

Troubleshooting

Most common defects

- Warping: Corners of the print lift and detach from the platform. Advice is to increase the build plate temperature. Wait long enough to allow the heat to dissipate to the top surface of the substrate.
- First layer not sticking/parts coming loose: The first layer of your print does not seem to want to stick or your parts come loose partway through the print. Remedies: check bed levelling and first layer thickness, increase size of brim, raise bed temperature, add appropriate adhesion promotor e.g. 3D-Lac® or glue-stick to the build plate or change to PEI bed substrate.
- Filament grinding: The feeder wheels have ground a groove into the filament. Remove the damaged filament and start again, reduce printing speed, reduce retraction speed and length.
- Stringing: Unwanted strands of plastic span across the print. Lower nozzle temperature, enable retraction, or increase the retraction length.

More information at am.covestro.com

Edition: May 2022 · Printed in Germany

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