

3D Printing Guidelines

Arnitel® ID 2045

TPC

GRADE CODING

Arnitel® ID 2045 flexible 3D printing grade based on > 50% renewable content.

Packaging: Arnitel® ID 2045 grades are supplied in airtight, moisture-proof packaging with 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 closed.

MACHINERY SETTINGS

Nozzle diameter: 0.4 mm

Filament diameter: 2.85 mm, 1.75 mm

Print Speed: 20 – 50 mm/s (obeying the maximal throughput of the extruder).

Extrusion width: 0.4 mm (or at least equal to nozzle diameter).

Layer Height: 0.1 – 0.2 mm / First layer: 100 – 150% of first layer thickness.

Extrusion temperatures: Extruder: 230°C / 446°F. Arnitel® ID 2045 can be used with a range of nozzle temperature (210 – 250 °C / 410 – 482°F). Preferred temperature to print your object is 230°C / 446°F. To generate a homogeneous melt, the melt temperature should always be above 200°C / 392°F. Optimal mechanical properties will be achieved at melt temperature between (210 – 250 °C / 410 – 482°F).

Bed Temperature:

Build plate temperature setting: 30 – 60°C / 86 – 140°F. Prior to removing the printed part from the build plate, the build plate temperature should be lowered to ambient to separate the part from the build plate easily and thus avoid severe deformation of the printed part.

GENERAL PROCESSING SETTINGS

Build plate adhesion: For the best adhesion with Arnitel® ID 2045 a 3D lack (Dimafix) or a glue stick could be used. Smear a reasonably thick layer on the build plate, which makes the print design adhere properly. Alternatively, printing on bare glass can be used. In this case the glass substrate must be free of dirt and grease. Therefore cleaning with ethanol or acetone is preferred. After cleaning it is advised to add a brim of at least 5 mm around the part.

SAFETY

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

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STARTUP/SHUT DOWN

Production has to be started with a clean machine. Starting the machine, push at least 5 cm of virgin filament through the nozzle. Remove the filament from the machine before shutting down the printer.

PRODUCTION BREAKS

During production breaks longer than a few minutes, it is advised to extrude some filament through the nozzle when printing continues.

TROUBLESHOOTING

Most common defects:

- **Warping.** Corners of the print lift and detach from the platform. Advice is to rise the build plate temperature.
- **First layer not sticking or parts coming loose.** The first layer of the print does not stick or the parts come loose partway through the print. A solution is to add a 3D lack or a glue stick to the build plate or to raise the build plate temperature.
- **Filament grinding.** The feeder wheels have created a groove into the filament. Remove the groove filament and start again, reduce the printing speed, reduce the retraction speed and length.
- **Stringing.** Unwanted strands of polymer span across the print. The retraction of the filament is not high enough. Enable a higher retraction or lower the nozzle temperature.

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