Arnitel®

Arnitel® ID 2060-HT

TPC for high temperature applications

GRADE CODING

Arnitel® ID flexible 3D printing grade for high temperature applications.

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

Arnitel® ID grades are supplied in airtight, moisture-proof packaging.

Moisture content as delivered

Arnitel® ID grades are packaged at a moisture level <0.1 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.

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Recommendations for 3D printing

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MACHINERY SETTINGS

Common fused filament fabrication (FFF) equipment should work with Arnitel® filaments. Due to its flexible nature direct drive extruders will be recommended. However, Bowden type extruders modified for use with flexible filaments are known to work as well. 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:

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:

Layer: 0.1-0.2 mm
First layer: 100-150% of first layer thickness

Extrusion temperatures:

Extruder: 220 - 245°C / 428 - 473°F

Arnitel® ID can be used with a range of nozzle temperature (220–245 °C / 428–473°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 in the given range.

Bed Temperature:

Build plate temperature setting: 80-120°C / 176-248°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.

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GENERAL PROCESSING SETTINGS

Build plate adhesion

Best adhesion with Arnitel® ID is established using an PEI sheet. Alternatively, double adhesive tape or film can be used as well. Larger footprint by adding a brim of at least 5 mm to the print helps adhesion and prevention of warpage.

SAFETY

For the safety properties of the material, we 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. Remove the filament from the machine before shutting down your printer.

PRODUCTION BREAKS

During production breaks longer than 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 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, disable retraction or reduce retraction speed and length
- Stringing: Unwanted strands of plastic span across the print. Lower nozzle temperature, increase travel speed of the print head.

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