

# Arnitel® ID 2045

TPC

## GRADE CODING

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

## MATERIAL HANDLING

### Storage

In order to prevent moisture pick up and contamination, supplied packaging should be kept closed and undamaged. For the same reason, partial 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 <0.05 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.

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## Recommendations for 3D printing

# Arnitel<sup>®</sup> ID 2045

### MACHINERY SETTINGS

Normal fused filament fabrication (FFF) equipment should work with Arnitel<sup>®</sup> filaments. The materials have been tested and the settings via Slic3R/Cura below were used. The tests were performed on Ultimaker, Cartesio.

Nozzle diameter: 0.4 mm  
Filament diameter: 2.85 mm (Ultimaker); 1.75 mm (Cartesio)

#### Print Speed:

First layer: 20 mm/s  
Perimeters: 50 mm/s  
Infill: 50 mm/s  
Bridges: 20 mm/s  
Gap fill: 20 mm/s

#### Extrusion width:

First layer: 0.8 mm  
Perimeters: 0.8 mm  
Infill: 0.8 mm  
Bridges: 0.8 mm  
Gap fill: 0.8 mm

#### Layer Height:

Layer: 0.1 mm  
First layer: 0.3 mm

#### Extrusion temperatures:

Extruder: 240°C

Arnitel<sup>®</sup> can be used with a wide range of nozzle temperature (210 - 250 °C / 410 - 482°F). The preferred temperature to print an object is 240°C / 464°F. To generate a good and homogeneous melt, the melt temperature should always be above 200°C / 356°F. Optimal mechanical properties will be achieved at melt temperatures between (210 - 250 °C / 410 - 482°F).

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### Build plate Temperature:

Build plate temperature setting: 30°C

The build plate temperature depends on the position where printing is needed. If printing is executed in the middle of the build plate, a temperature of 30°C / 86°F should be the build plate temperature. Temperatures up to 80°C are also known to work well.

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

### GENERAL PROCESSING SETTINGS

#### Build plate adhesion

For the best adhesion with Arnitel<sup>®</sup> a glue stick (Staples) or 3D lack 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.

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## 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.

## 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 lower 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 glue or 3D-lack 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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