

# Novamid® AM 1030 FR (F)

## PA6/66 FR

### GRADE CODING

Novamid® AM 1030 FR (F) is a flame retardant (V0 at 1.6 & 3.2 mm & V2 at 0.85mm), UL Blue Card certified, easy to print 3D printing grade based on PA666.

### 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

Novamid® AM 1030 FR (F) is supplied in airtight, moisture-proof packaging.

#### Moisture content as delivered

Novamid® AM 1030 FR (F) is 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.

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## Recommendations for 3D printing

Novamid<sup>®</sup> AM 1030 FR (F)MACHINERY SETTINGS

Common fused filament fabrication (FFF) equipment should work with Novamid<sup>®</sup> 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.

UL Blue Card valid on Ultimaker S5 with a brass nozzle

Nozzle diameter:  $\geq 0.4$  mm

Nozzle material: Brass/Hardened steel (The UL certification is valid on the brass nozzle. Best results with Hardened steel)

Filament diameter: 2.85 mm, 1.75 mm

Print Speed:

Average 50 mm/s (obeying the maximal throughput 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:

Nozzle temperature:  $\pm 265 - 275^{\circ}$  C

Bed temperature:  $\pm 110 - 115^{\circ}$  C

An enclosed printer and heated build chamber is preferred.

Note, that 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 SETTINGSBuild plate adhesion

For the best adhesion with Novamid<sup>®</sup> AM 1030 FR (F) it is advised to use an adhesive promotor, e.g. Magigoo PA. PEI (polyether imide) build plate has shown to establish good adhesion, but to prevent warpage it should be of sufficient thickness. Adding a (large) brim to the print will help in establishing bed adhesion during the print as well.

Prior to applying an adhesive promotor, any surface must be free from dirt and grease. Therefore cleaning with ethanol or acetone is recommended.

Note: Prior to removing the printed part, the build plate temperature should be lowered to ambient temperature to facilitate separation and thus avoiding severe deformation of the printed part.

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## 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 Novamid<sup>®</sup> AM 1030 FR (F), purge the printer with PLA or PETG.

Remove the filament from the machine before shutting down the 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 lower the build plate temperature. Wait long enough to allow the heat to dissipate to the top of the 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. Magigoo PA 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.

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