

3D Printing Guidelines

Ingeo™ 3D870

PLA

GRADE CODING

Ingeo™ 3D870 is a grade specifically developed for manufacturing 3D printer monofilament.

SAFETY

For the safety properties of the material, please refer to our SDS which can be downloaded from our website (www.nexeo3d.com) in the “Documents” tab for each material. During practical operation wear personal safety protections for hand/eye/body. Prior start printing you should read the entire document.

STARTUP/SHUT DOWN

Production has to start with a clean machine. Start the machine, feed it with dried material and extrude at least 50 mm of new filament through the nozzle. Be sure to calibrate the build plate. We recommend to use a feeler gauge of 0.15mm to do the leveling. Prior to applying an adhesive promotor, any surface must be free from dirt and grease. Therefore cleaning with ethanol or acetone is recommended. Remove the filament from the machine before shutting down the printer, and store the unused filament properly. Clean the build plate after printing.

Production Breaks: If there are production interruptions exceeding a few minutes, purge the nozzle adequately. Production Breaks: If there are production interruptions exceeding a few minutes, purge the nozzle adequately.

GENERIC MACHINERY SETTINGS

The following settings are a generic guide. Geometrical requirements of the application or the printer used could make adjustments necessary to obtain the best result. Common fused filament fabrication (FFF) equipment should work with Ingeo™ 3D870 filaments, direct drive as well as Bowden type extruders. Typical settings for any slicing software (e.g. Cura, Simplify3D) are listed below. These generic settings are established for a 0.4mm Nozzle Diameter and a Glass Build Plate surface.

Note: Different nozzle diameters and/or a different build plate surface, the settings should be changed accordingly.

Print Speed: 50 mm/s

Layer Height: Layers: 0.2 mm

Brim/Skirt: 15 outlines with 1 layer

Extrusion temperatures: Ingeo™ 3D870 can be used with a range of nozzle temperature (200–225 °C / 392–437°F). Preferred temperature to obtain optimal mechanical properties will be achieved at 205°C/ 401°F.

Build plate Temperature: 65°C / 149°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.

Build plate adhesion: For the best adhesion with Ingeo™ 3D870 it is essential to use PrintaFix as an adhesive promotor. Adding a (large) skirt/brim to the print will help in establishing build plate adhesion during the print as well.

Cooling Fan: Off

TROUBLESHOOTING

Most common defects:

- **Warping:** Corners of the print lift and detach from the platform. Advice is to increase the Skirt/Brim and/or print the part in another direction. 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, add appropriate adhesion promotor (Printafix) to the build plate.
- **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. Increase the extruder temperature.
- **Stringing:** Unwanted strands of plastic span across the print. Enable retraction, or increase the retraction length and/or speed. Be sure that the material is completely dried.

MATERIAL HANDLING

Storage: In order to prevent 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: Ingeo™ 3D870 is supplied in plastic airtight, moisture-proof packaging.

Moisture content as delivered: Ingeo™ 3D870 is packaged at a moisture level <0.05 w%.