How do you dry filament?

Asked 3D Content Team
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Abstract. Heat the spool below its softening point, then seal it with desiccant. Bambu Lab's oven setting is 50 °C for PLA and 60 to 65 °C for PETG, for 8 hours.

Keywords: pla, petg, nylon

Table 1. The number

Method	How hot it gets	PLA / PETG / TPU / nylon	Limit
Filament dryer	65 to 85 °C at the top setting, by model	Bambu Lab AMS HT: 45 / 65 / 75 / 85 °C, 12 h (TPU 18 h)	A 65 °C unit such as the Bambu Lab AMS 2 Pro may not fully dry TPU, and Bambu lists it as not compatible with nylon
Forced-air convection oven	Up to 140 °C (Bambu's top oven setting); the spool is the real limit	Bambu Lab: 50 / 60 to 65 / 70 / 75 to 85 °C, 8 h (nylon 8 to 12 h)	Bambu wants at least 250 × 250 × 90 mm inside per spool, with the spool away from the heating elements
Kitchen oven	Many can't be set low enough, says Prusa	Same as a convection oven, if it holds the temperature	Bambu Lab says don't use one; Polymaker says a convection model can work at a low, stable setting
Enclosed printer's heated bed	Bed set to 60 to 100 °C	Bambu Lab: 60 to 70 / 75 to 85 / 80 to 90 / 90 to 100 °C, 12 h	Open-frame printers can't do it; flip the spool halfway through
Food dehydrator	35 to 73 °C (95 to 165 °F) on a COSORI Pioneer	Prusa: 45 / 55 / 60 °C, 6 h (TPU 4 to 6 h); nylon out of reach	The trays come out to fit a spool; Prusa says most run low
Sealed box with desiccant	Room temperature	None: storage only	Won't reliably dry a wet spool, says MatterHackers; Bambu wants storage below 20 % RH

1 How do you dry filament?

Heat the spool below the plastic's softening point for the time its maker sets, then seal it with desiccant. Bambu Lab sets PLA (polylactic acid) at 50 °C and PETG (glycol-modified polyethylene terephthalate) at 60 to 65 °C for 8 hours in a forced-air oven. A filament dryer, enclosed printer's heated bed or food dehydrator also works.

1.1 The number

Settings come from Bambu Lab's Filament Drying Recommendations wiki and the Prusa Knowledge Base (Prusament). Bambu's TPU (thermoplastic polyurethane) figures are for TPU 95A HF, and its nylon figures for carbon- and glass-filled nylon (PA6-CF/GF, PAHT-CF/GF). The dryer range spans the seven dryers in MatterHackers' drying guide, and the dehydrator range is from COSORI's Pioneer 5-Tray manual.

1.2 Why

Prusa says most printing plastics are hygroscopic: they pull water out of the air. At the nozzle that water boils, and Bambu Lab says the steam makes the melt expand and extrude erratically.

Warm, moving air pulls the water back out. Polymaker says airflow matters: without it, drying takes longer or needs more heat. The ceiling is the softening point, and Prusa warns that going past its settings makes the filament "soften and stick together."

The job isn't done when the timer ends. Left out in a room at around 55 percent humidity, Bambu Lab says, freshly dried filament can be wet enough to hurt print quality again in 2 to 12 hours.

1.3 How do you dry wet filament, step by step?

These steps hold for every method in the table.

1. **Look up your filament's setting** on its maker's wiki or data sheet. Prusa says to keep to the listed times as well as the temperatures, or the filament overdries.
2. **Check the spool's heat rating.** Bambu Lab warns that some third-party spools deform. Prusament's current black spool takes 90 °C. The old black one loosens above 45 °C unless a screw joins its sides. Put spool-less refills on a reusable spool first.
3. **Take the filament out of the feed path.** Unload it from the toolhead, or pull it out of a dryer's feeder: Bambu Lab says gears deform softened filament.
4. **Dry one temperature class at a time.** Bambu's example: when you dry ABS (acrylonitrile butadiene styrene), take any PLA out.

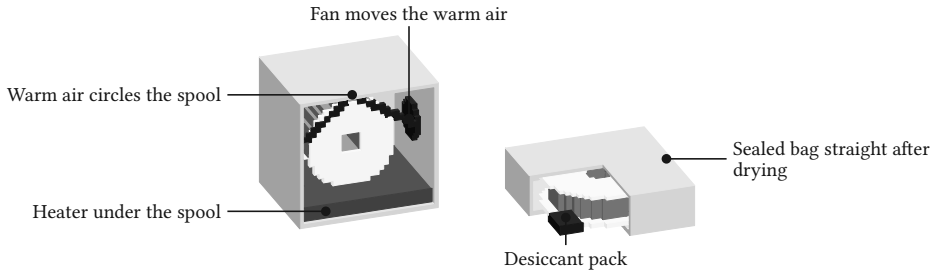


Figure 1. Warm, moving air pulls the water out below the plastic's softening point, and sealing the spool with desiccant straight after keeps it from soaking water back up.

5. **Close it up.** Shut the dryer lid and keep its vents clear. Cover a bed-dried spool and close the printer door.
6. **Let it cool before you handle it.** Bambu Lab's dryer guide says to wait 5 to 10 minutes. On a heated bed, set the bed to 0 °C and wait until the spool isn't hot to the touch.
7. **Seal it at once** in a bag or box with desiccant. Bambu Lab says 20 percent RH (relative humidity) keeps most filament dry for 2 to 7 days.

1.4 How do you use a filament dryer?

1. Check that the dryer's top temperature covers your filament. Prusa says to match the box's specifications to the drying temperature.
2. Seat the spool and leave the filament unloaded from the outlet, then close the lid.
3. Pick the material preset, or set the temperature and time by hand. Bambu Lab's AMS 2 Pro guide gives PLA 45 to 55 °C for 6 to 8 hours, though its drying table runs PLA at 45 °C for 12 hours.
4. Start it and watch the humidity, temperature and time remaining on the display.
5. When it finishes, look the filament over for flattening or gear marks, then print from it or seal it.

1.5 How do you dry filament at home without a dryer?

- **Convection oven:** Use a forced-air model and an external thermometer, since Prusa says home ovens don't measure temperature precisely. Bambu Lab rules out microwaves: they heat unevenly and the temperature can't be controlled.
- **Enclosed printer:** Unload the toolhead, lower the bed, cover the spool and run the bed at the table's setting. The full procedure is on the heated-bed drying page.
- **Food dehydrator:** Lift out the trays so the spool fits, per Prusa. A 73 °C top setting covers PLA, PETG and TPU, but not Bambu's or Prusa's nylon temperatures. COSORI's manual says to use the appliance only as it directs, so drying filament in it is outside the maker's stated use.

1.6 Can wet filament be saved?

Yes, in most cases. Bambu Lab's AMS 2 Pro guide says drying removes moisture-related surface defects and the vapor voids that weaken parts, and Polymaker's before-and-after photos show the difference on PETG. MatterHackers' advice is to dry the spool before you change settings or hardware.

Drying has limits. Bambu Lab says nylon left in open air for about 3 months becomes very hard to dry at 80 to 90 °C. PC (polycarbonate) can turn brittle after repeated heat-and-cool cycles and break during printing, though Bambu says the printed part's strength is unaffected. And drying can cause its own damage: Prusa and Bambu Lab both warn that too much heat makes the coils stick together or deform.

1.7 How to check it on your own print

- **Listen at the nozzle.** Polymaker says pops or sizzling during extrusion are water vapor escaping. If they stop after drying, the spool was wet.
- **Print the same file before and after.** Polymaker says moisture is easiest to spot in PETG. Stringing and bubbles that vanish confirm it.
- **Put a hygrometer in the storage box.** Bambu Lab suggests one to monitor the actual humidity.
- **If nothing changed, look elsewhere.** MatterHackers notes that other printer problems cause the same symptoms. A spool dried at its full setting that still fails points to settings or hardware.

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