What are the drying temperatures and times for each filament?

Asked 3D Content Team
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Abstract. Dry PLA at 45 to 55 °C, PETG at 55 to 65 °C, TPU at 60 to 70 °C and nylon at 75 to 100 °C, for 4 to 12 hours, per Bambu Lab, Prusa and Polymaker.

Keywords: pla, petg, nylon, tpu

1 What are the drying temperatures and times for each filament?

Dry PLA at 45 to 55 °C, PETG at 55 to 65 °C, TPU at 60 to 70 °C, ABS and ASA at 70 to 85 °C, PC at 75 to 90 °C and nylon at 75 to 100 °C, for 4 to 12 hours. Those are the oven and dryer settings Bambu Lab, Prusa and Polymaker publish.

1.1 The number

Bambu Lab's figures are the oven column of its Filament Drying Recommendations wiki, and its HIPS is Support for ABS, which Bambu says is mainly HIPS. Prusa's are the Prusa Knowledge Base table for Prusament. Polymaker's come from each named data sheet: Tg is the glass transition, Vicat the softening temperature. The PDF of this page, linked at the end, prints the same chart as a cheat sheet.

PLA is polylactic acid, PETG glycol-modified polyethylene terephthalate, ABS acrylonitrile butadiene styrene, ASA acrylonitrile styrene acrylate, PC polycarbonate, PA polyamide (nylon), TPU thermoplastic polyurethane, PVA polyvinyl alcohol, HIPS high-impact polystyrene, PVB polyvinyl butyral, PP polypropylene, PPS polyphenylene sulfide and PPA polyphthalamide. CF and GF mean carbon and glass fiber.

1.2 Why

Water in the filament flashes to steam in the hot nozzle. Bambu Lab blames that steam for bubbles, stringing, holes and weaker parts. More heat drives it out faster, so each maker sets its figure just under the point where the coils soften. Go over it and, Prusa warns, filament will "soften and stick together."

Table 1. The number

Filament	Bambu Lab, forced-air oven	Prusa, Prusament	Polymaker, data sheet	Softening point, Polymaker data sheet
PLA, PLA Matte	50 °C, 8 h	45 °C, 6 h	55 °C, 6 h (PolyLite PLA, Panchroma Matte)	Tg 61 °C, Vicat 63 °C (PolyLite PLA)
PLA Silk	55 °C, 8 h	not listed	55 °C, 6 h (Panchroma Silk)	Vicat 64.7 °C (Panchroma Silk)
PETG, PETG-CF	60 to 65 °C, 8 h	55 °C, 6 h	65 °C, 6 h (PolyLite PETG)	Tg 81 °C, Vicat 84 °C
ABS	75 to 85 °C, 8 h	not listed	70 °C, 6 h (PolyLite ABS)	Tg 101 °C, Vicat 104 °C
ASA	75 to 85 °C, 8 h	80 °C, 4 h	70 °C, 7 h (Polymaker ASA)	Tg 98 °C, Vicat 105 °C
PC	75 to 85 °C, 8 h	85 °C, 5 h (PC Blend); 90 °C, 4 h (PC Blend Carbon Fiber)	75 °C, 6 h (PolyLite PC)	Tg 113 °C, Vicat 120 °C
Nylon, unfilled	not listed	not listed	100 °C, 8 h (PolyMide CoPA)	Tg 66 °C, Vicat 180 °C
PA6-CF, PA6-GF, PAHT-CF	75 to 85 °C, 8 to 12 h	not listed	100 °C, 10 h (Fiberon PA6-CF20)	Tg 74.2 °C, Vicat 219.2 °C
PA11-CF, PA12-CF	not listed	90 °C, 6 h (PA11 Carbon Fiber)	100 °C, 10 h (Fiberon PA12-CF10)	Tg 55 °C, Vicat 170.2 °C
TPU, 85A to 95A	70 °C, 8 h	60 °C, 4 to 6 h	70 °C, 8 h (PolyFlex TPU90, TPU95)	not listed
PVA	75 to 85 °C, 8 to 12 h	not listed	80 °C, 12 h (PolyDissolve S1)	not listed
HIPS	80 °C, 4 h (Support for ABS)	not listed	no data sheet	no data sheet
PVB	not listed	45 °C, 8 h	50 °C, 12 h (PolySmooth)	Tg 70 °C, Vicat 70 °C
PP-CF, PP-GF	not listed	70 °C, 2 to 4 h	no data sheet	no data sheet
PPS-CF, PPA-CF	100 to 140 °C, 8 to 12 h	not listed	100 °C, 10 h (Fiberon PPS-CF10)	Tg 97.7 °C, Vicat 267.5 °C (PPS-CF10)

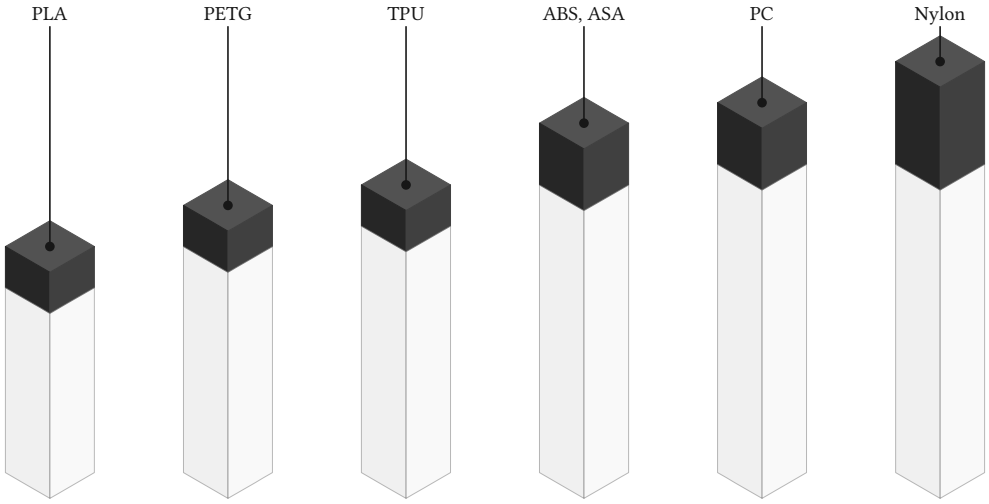


Figure 1. Each dark block spans the drying temperatures the makers publish for that plastic, drawn to scale, from PLA at the bottom to nylon at the top.

So every Polymaker setting sits below the plastic's listed Vicat temperature, the point where a loaded needle sinks into the surface. For PLA, PETG, ABS, ASA, PC and PVB it also stays under the glass transition: PolyLite PLA dries at 55 °C against a 61 °C Tg. Nylon and PPS are dried hotter than their Tg. Fiberon PA6-CF20 runs at 100 °C, over its 74.2 °C Tg but far under its 219.2 °C Vicat point.

The makers often differ by 10 °C or more on one plastic: Prusa dries PETG at 55 °C, Polymaker at 65 °C. Each figure is for that maker's own filament, so use your brand's column or its data sheet.

1.3 What temp should you dry filament at in °F?

From 113 °F for PLA up to 212 °F for nylon, and 284 °F for PPS-CF. The °F figures are exact conversions of the makers' Celsius settings above.

Table 2. What temp should you dry filament at in °F?

Filament	Makers' range, °C	Same range, °F
PLA, incl. Silk and Matte	45 to 55 °C	113 to 131 °F
PVB	45 to 50 °C	113 to 122 °F
PETG	55 to 65 °C	131 to 149 °F
TPU	60 to 70 °C	140 to 158 °F
PP-CF, PP-GF	70 °C	158 °F
ABS, ASA	70 to 85 °C	158 to 185 °F
PC	75 to 90 °C	167 to 194 °F
PVA	75 to 85 °C	167 to 185 °F
HIPS	80 °C	176 °F
Nylon, incl. CF and GF	75 to 100 °C	167 to 212 °F
PPS-CF, PPA-CF	100 to 140 °C	212 to 284 °F

1.4 How long does it take to dry filament?

Most filament takes 4 to 12 hours at the chart's temperatures: 6 to 8 hours for PLA and PETG, 6 to 12 hours for nylon. A sealed new spool may need none, since Polymaker says it pre-dries and vacuum-seals every spool. Three things make it longer:

- **Nylon.** Bambu Lab gives nylon composites up to 12 hours, and Polymaker runs PA6-CF20 for 10 hours at 100 °C. Bambu warns that nylon left in open air for about 3 months becomes very hard to dry at 80 to 90 °C.
- **A lower temperature or less airflow.** Bambu Lab's AMS 2 Pro and AMS HT dryers run PLA for 12 hours at 45 °C, against 8 hours at 50 °C in an oven, and its heated-bed method also takes 12 hours. Polymaker adds that poor airflow slows drying.
- **A wetter or heavier spool.** For PLA, PETG and PC left open for 2 weeks at 20 °C and 60 percent RH (relative humidity), Polymaker used twice the recommended drying time. It also says spool size and weight change the temperature inside its PolyDryer box.

Don't overshoot: Prusa asks you to stick to its times to avoid overdrying, and Bambu says repeated drying cycles can make PC brittle.

1.5 What settings should you use on a filament dryer?

Use the chart's temperature, capped at the dryer's maximum, and expect longer times than an oven. The Bambu Lab AMS 2 Pro handles filaments that dry at up to 65 °C. The Bambu Lab AMS HT goes hotter, though Bambu says PVA may not dry fully in it and lists PPS-CF and PPA-CF as not compatible. Bambu's settings:

Table 3. What settings should you use on a filament dryer?

Filament	AMS 2 Pro	AMS HT
PLA, incl. Matte and Silk	45 °C, 12 h	45 °C, 12 h
PETG, PETG-CF	65 °C, 12 h	65 °C, 12 h
TPU	65 °C, 12 h, may not dry fully	75 °C, 18 h
ABS, ASA, PC	not compatible	80 °C, 8 h
PA6-CF, PAHT-CF	not compatible	85 °C, 12 h
PVA	not compatible	85 °C, 18 h
PPS-CF, PPA-CF	not compatible	not compatible

Dry PLA, PVA and TPU in rotation mode, not static: Bambu says their coils can stick together or deform when left still. The Polymaker PolyDryer uses three power levels instead of a set temperature, and its hottest range is 68 to 73 °C. Polymaker's Panchroma sheet sets level 1 for Silk PLA and levels 1 to 3 for Matte.

1.6 How to check it on your own print

- **Measure next to the spool.** Prusa says home ovens read temperature poorly, so use an external thermometer. Bambu Lab rules out kitchen and microwave ovens for their hot spots. It wants a forced-air oven at least 250 mm deep, 250 mm wide and 90 mm high per spool, with the spool away from the heating elements. Polymaker allows a household convection oven at a low, stable temperature.
- **Check the spool before going above 45 °C.** Prusa's older black spools need a screw at least 65 mm long to hold the halves together past 45 °C. Its older grey spools' glue takes up to 90 °C. Bambu warns that some third-party spools deform. Move spool-less refills onto a reusable spool first.
- **Seal it once it cools.** At about 55 percent RH, Bambu says freshly dried filament can absorb enough moisture to hurt prints within 2 to 12 hours. Below 20 percent RH it stays dry for 2 to 7 days.
- **Print a test piece.** Polymaker says popping, hissing or bubbles mean it's still wet. Dry it again for the full time. If the coils stuck together, use the row's lowest figure next time.

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