What temperature and how long should you dry nylon filament?

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Published October 17, 2026 · Last verified October 17, 2026

Abstract. Most nylon sheets say 6 to 12 hours at 80 to 100 °C: Bambu Lab PA6-CF 80 °C for 8 to 12 h, Polymaker Fiberon 100 °C for 10 h, Prusament PA11 CF 90 °C for 6 h.

Keywords: nylon

1 What temperature and how long should you dry nylon filament?

Most nylon data sheets call for 6 to 12 hours at 80 to 100 °C. Bambu Lab dries PA6-CF and PAHT-CF at 80 °C for 8 to 12 hours, Polymaker's Fiberon grades take 100 °C for 10 hours, and Prusament PA11 Carbon Fiber 90 °C for 6 hours. At 70 °C, plan on 12 to 18 hours.

1.1 The number

PA (polyamide) is the chemical name for nylon. CF and GF mean carbon and glass fiber, and RH is relative humidity.

The eSUN rows come from its PA, PA-CF and PA12 printing-parameter pages. The Bambu Lab rows come from its PA6-CF, PA6-GF and PAHT-CF technical data sheets, which specify a forced-air oven. Prusa's figures come from the Prusa Knowledge Base drying article and the PA11 Carbon Fiber launch post. Polymaker's come from its PolyMide CoPA and Fiberon data sheets and product pages.

1.2 Why

Nylon pulls water out of the air, and PA6 absorbs the most. Bambu Lab's sheets put saturated water uptake at 2.35 percent for PA6-CF and 2.56 percent for PA6-GF, against 0.88 percent for the long-chain PAHT-CF (25 °C, 55% RH). The Prusa Knowledge Base says wet polyamide bubbles as it prints, which leaves uneven layers and a rough surface.

The spread in the table trades time for temperature, capped by what the spool survives. Bambu Lab's spools are PC (polycarbonate) and ABS (acrylonitrile butadiene styrene), rated to 90 °C, and its oven settings for nylon stop at 85 °C. Prusa warns that going over its temperatures makes filament soften and stick together. Polymaker says airflow matters more than heat, and its own dryer runs nylon longer at a lower temperature instead.

1.3 Can you dry nylon filament at 70 °C?

Yes, but give it 12 hours or more. eSUN sets 70 °C for more than 12 hours on its PA, PA12 and PA-CF. The Polymaker PolyDryer peaks at 68 to 73 °C and runs PA for 18 hours on its top power level, a figure based on samples left 5 days at 25 °C and 70% RH. Bambu Lab publishes no nylon setting below 75 °C.

Polymaker's general nylon page gives 50 to 70 °C for 6 to 8 hours, well short of the 18 hours in its own dryer manual.

Table 1. The number

Nylon grade	Filament	Temperature	Time	While printing
PA6/66 copolymer	eSUN PA	70 °C	over 12 h	not stated
PA6/66 copolymer, 20% CF	eSUN PA-CF	70 °C	over 12 h	not stated
PA12	eSUN PA12	70 °C	over 12 h	not stated
PA6, CF	Bambu Lab PA6-CF	80 °C	8 to 12 h	Sealed with desiccant, below 20% RH
PA6, GF	Bambu Lab PA6-GF	80 °C	8 to 12 h	Sealed with desiccant, below 20% RH
PA12 and other long-chain PA, CF	Bambu Lab PAHT-CF	80 °C	8 to 12 h	Sealed with desiccant, below 20% RH
PA11, CF	Prusament PA11 Carbon Fiber	90 °C	6 h (4 to 6 h in the launch post)	Store dry or dry before every print
PA6/66 copolymer	Polymaker PolyMide CoPA	100 °C	8 h	In a heated dryer, below 20% RH
PA6, CF	Polymaker Fiberon PA6-CF20	100 °C	10 h	In a heated dryer, below 20% RH
PA6, GF	Polymaker Fiberon PA6-GF25	100 °C	10 h	In a heated dryer, below 20% RH
PA612, CF	Polymaker Fiberon PA612-CF15	100 °C	10 h	In a heated dryer, below 20% RH
PA12, CF	Polymaker Fiberon PA12-CF10	100 °C	10 h	In a heated dryer, below 20% RH

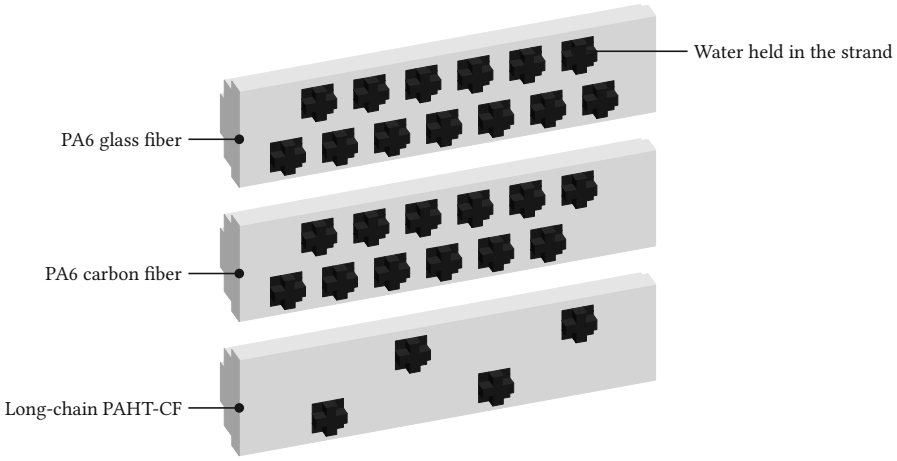


Figure 1. The dots are roughly to scale with Bambu Lab's saturated water uptake for each grade, and the two PA6 grades hold far more water than the long-chain PAHT-CF.

Table 2. Can you dry nylon filament at 70 °C?

Drying method	Nylon setting from its maker
Bambu Lab AMS 2 Pro (for filaments needing up to 65 °C)	Not compatible with PA grades
Polymaker PolyDryer (peaks at 68 to 73 °C)	18 h on power level 3, its highest
Bambu Lab AMS HT	85 °C, 12 h
Forced-air oven, Bambu Lab table	75 to 85 °C, 8 to 12 h
Enclosed Bambu Lab printer's heated bed, spool covered	90 to 100 °C, 12 h

Settings come from Bambu Lab's Filament Drying Recommendations wiki and Polymaker's PolyDryer wiki page and user manual. For the bed method step by step, see what bed temperature dries filament.

1.4 How do you dry nylon CF filament?

The same way as plain nylon, for the same time or a little longer. eSUN gives PA-CF the same 70 °C, over-12-hour setting as its PA. Polymaker sets its carbon-fiber Fiberon grades at 100 °C for 10 hours, against 8 hours for unfilled CoPA.

Bambu Lab PA6-CF and PAHT-CF take 80 °C for 8 to 12 hours in a forced-air oven, or 85 °C for 12 hours in the AMS HT. Never use a microwave or kitchen oven: Bambu Lab says both heat unevenly and can damage the filament.

1.5 Can nylon be dried?

Yes, and the makers say you must. Bambu Lab marks drying before use as required for its PA grades, and Polymaker says its nylons need a filament dryer. The limit is time in open air. Bambu says nylon left out for about 3 months becomes very hard to dry at 80 to 90 °C, so seal spools you aren't using with desiccant.

1.6 How do you dry nylon filament properly?

1. **Use the sheet for your exact spool.** PA6/66 copolymer alone runs from 70 °C (eSUN) to 100 °C (Polymaker).
2. **Check the spool's heat rating.** Bambu Lab's PC and ABS spool and Prusa's current black spool are both rated to 90 °C. Polymaker's 100 °C setting is above that, so confirm your spool can take it first.
3. **Match the heater to the sheet.** Prusa says to compare a dryer's specification with the filament's drying temperature. Home ovens don't measure temperature precisely, so verify one with an external thermometer.
4. **Run the full time, and no longer.** Prusa asks you to stick to its times to prevent overdrying.
5. **Print from the dryer or a sealed box.** Polymaker says to print its nylons from a heated dryer the whole time, and Bambu Lab requires desiccant protection below 20% RH during use. Prusa says PA6 can absorb too much moisture even during a long print.
6. **Seal it straight after.** Bambu Lab says freshly dried filament at about 55% RH can pick up enough moisture to hurt print quality within 2 to 12 hours. At 20% RH it stays dry for 2 to 7 days.

1.7 How to check it on your own print

- **Listen at the nozzle.** Polymaker's test: popping or cracking noises mean the filament needs drying.
- **Look at the walls.** Bubbles, uneven layers and a rough surface point to water, per the Prusa Knowledge Base.
- **Pull a support.** Prusa says supports come off easily when PA11 Carbon Fiber is dry.
- **Still wet after a full cycle?** Run it again at the sheet's temperature, not hotter, or the coils can soften and stick. Once it prints clean, set the nozzle from the nylon nozzle temperature table.

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Cite as: Asked 3D. "What temperature and how long should you dry nylon filament?" October 17, 2026. https://asked3d.com/answers/nylon-drying-temperature. Last verified October 17, 2026.