Can wet filament clog a nozzle?

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Abstract. Yes: Bambu Lab says damp nylon, PC and fiber-filled filament are prone to clogging. Wet PLA mostly bubbles and strings. Dry PLA at 45 to 55 °C for 6 to 8 hours.

Keywords: pla, petg, nylon, polycarbonate

Table 1. The number

Filament	Bambu Lab, forced-air oven	Prusa, Prusament	Polymaker data sheet	Drying before use, Bambu Lab
PLA	50 °C, 8 h (PLA Basic)	45 °C, 6 h	55 °C, 6 h (PolyLite PLA)	Recommended
PETG	60 to 65 °C, 8 h	55 °C, 6 h	65 °C, 6 h (PolyLite PETG)	Recommended
TPU	70 °C, 8 h	60 °C, 4 to 6 h	70 °C, 8 h (PolyFlex TPU95)	Required
ABS, ASA	75 to 85 °C, 8 h	ASA 80 °C, 4 h	ABS 70 °C, 6 h (PolyLite ABS)	Recommended
PC	75 to 85 °C, 8 h	PC Blend 85 °C, 5 h	not checked	Required
Nylon and filled nylon	PA6-CF/GF, PAHT-CF/GF 75 to 85 °C, 8 to 12 h	PA11 Carbon Fiber 90 °C, 6 h	100 °C, 8 h (PolyMide CoPA)	Required

1 Can wet filament clog a nozzle?

Yes. Bambu Lab says damp nylon (PA), polycarbonate (PC) and carbon- or glass-filled filaments are prone to clogging, and Polymaker lists clogging among moisture's effects. For PLA (polylactic acid), the symptoms makers describe are mostly bubbles and stringing from steam in the nozzle. Dry PLA at 45 to 55 °C for 6 to 8 hours.

1.1 The number

Oven settings and the drying requirement come from Bambu Lab's Filament Drying Recommendations wiki. The Prusament figures come from Prusa's drying article. The Polymaker column comes from its PolyLite PLA, PolyLite PETG, PolyFlex TPU95, PolyLite ABS and PolyMide CoPA data sheets. PETG is glycol-modified polyethylene terephthalate and TPU is thermoplastic polyurethane. ABS is acrylonitrile butadiene styrene, ASA is acrylonitrile styrene acrylate, and CF and GF mean carbon and glass fiber. To dry on the printer instead, see the heated-bed drying table.

1.2 What do the makers say moisture does in the hotend?

Table 2. What do the makers say moisture does in the hotend?

Source	What moisture does, in their words	Names a clog?
Bambu Lab, How to Avoid Nozzle Clogs	Water "vaporizes inside the nozzle, causing bubbles, stringing, poor flow, or rough surfaces"; PA, PC, CF and GF grades are "prone to warping or clogging when damp"	Yes, for those grades
Bambu Lab, Filament Drying	Steam makes the melt "expand, extrude erratically, and form bubbles": stringing, oozing, holes, rough surfaces, lower strength	No
Bambu Lab, Filament break in the path	Filament "can break inside the tool head, if it not dry enough"	A feed break, not a nozzle clog
Prusa, Drying filament	Poor surface, low layer adhesion, blobs, "bubbling and smoke during extrusion"	No
Prusa, clog and heat creep articles	Moisture isn't among the listed causes	No
Polymaker, We Dry our Filament	Moisture "can lead to issues like stringing, clogging, poor surface quality"	Yes, in general
Polymaker, Wet Filament	Bubbling, stringing, popping or hissing, pitted extrusion, "weak, brittle layers"	No
Polymaker, Nozzle Clogs	Moisture isn't among its clog causes	No

So the clog claim is real but narrow. Only Bambu Lab ties it to specific materials. The others put wet filament under print quality.

1.3 Why

Filament is hygroscopic: it pulls water from the air. Bambu Lab says freshly dried filament at about 55 percent relative humidity (RH) can take up enough to hurt print quality within 2 to 12 hours. In the nozzle that water flashes to steam. Polymaker says the pops or sizzling you hear are that vapor escaping, and Bambu Lab says the steam makes extrusion erratic.

How much this matters depends on the plastic. Prusa says PLA "doesn't change properties too much by uptaking humidity," while polyamide is "affected quite significantly." Polymaker rates nylon, PVA (polyvinyl alcohol), TPU and PETG highly hygroscopic and PLA low. Bambu warns that PA left in open air for about 3 months becomes very hard to dry at 80 to 90 °C.

1.4 Does old PLA clog nozzles more?

None of these makers says so. What they describe is breaking, not clogging. Bambu Lab says "a very dry or old filament can quickly become very brittle" and can snap inside the PTFE (polytetrafluoroethylene) tubes, especially at a tight bend just before the extruder. Polymaker's brittle-filament page, written mainly for carbon- and glass-filled grades, says long storage in a vacuum bag can partly dehydrate a polymer. Its fix for a long-sealed spool is to remove the outer 50 g. Yet Polymaker's first fix for snapping is drying, and Bambu's own breakage page says filament breaks in the toolhead when it isn't dry enough. The sources don't agree on whether dryness or damp makes old filament snap.

A snapped piece blocks the feed path, so clear it from the tube rather than unclogging the nozzle. For a spool that has sat unused a long time, Polymaker's advice is to dry it before printing.

1.5 Can wet filament cause heat creep?

Not according to the makers' own lists. Heat creep is filament softening above the melt zone. Between them, Bambu Lab, Prusa and Polymaker blame a hot room or enclosure, a weak

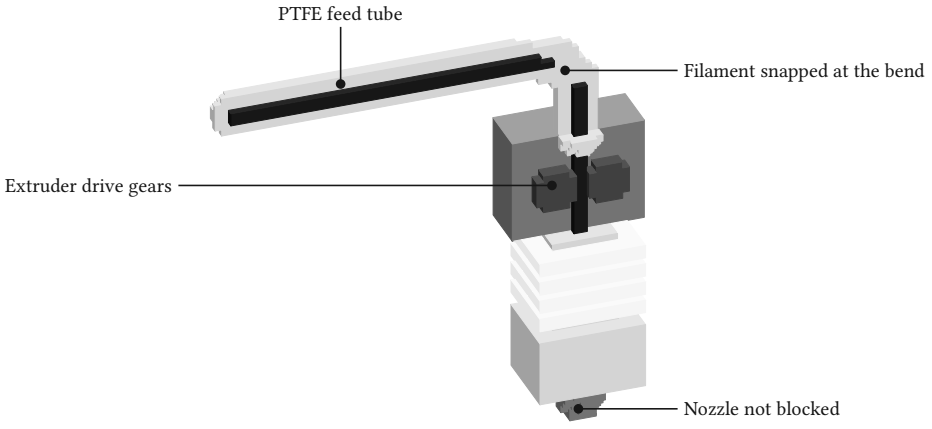


Figure 1. Old, brittle filament can snap inside the PTFE tube at a tight bend before the extruder, which blocks the feed path rather than the nozzle.

hotend fan, slow flow and long retractions. None lists moisture. Prusa names a room above 35 °C, or PLA in a closed enclosure, as the common triggers.

The symptoms differ too. Prusa describes heat creep as extrusion that stops mid-print while the printer keeps moving, sometimes with a clicking extruder. Bambu Lab's example printed normally, then clogged once the heat sink overheated. Wet filament shows up as popping, bubbles and strings while it extrudes. The full heat creep checklist is on what heat creep is.

1.6 How to check it on your own print

- **Listen at the nozzle.** Pops or hissing while it extrudes mean water, per Polymaker, as do bubbles in the purged strand. Steady extrusion that then stops mid-print points to heat creep instead.
- **Dry it and reprint the same file.** Use the table above. If the stringing and pops go away, moisture was the cause. Prusa also suggests swapping to another spool as a quick test.
- **Bend the end of an old spool.** If it snaps, follow Polymaker's advice: dry it, then cut off the outer 50 g if it still breaks.
- **Store it below 20 percent RH.** That's Bambu Lab's figure for keeping filament dry, in a sealed box with desiccant. Bambu says it holds for 2 to 7 days at that humidity.
- **If it's already clogged,** check the clog symptoms first, then clear it with the unclogging steps.

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