What temperature and how long should you dry ABS and ASA?

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Abstract. Dry ABS and ASA at 80 °C (176 °F): 8 hours on Bambu Lab's data sheets, 4 hours for Prusament ASA. Polymaker uses 70 °C for 6 to 7 hours.

Keywords: abs, asa

Table 1. The number

Filament	Drying setting	In °F	Time	Water absorption	Heat deflection, 1.8 MPa
Bambu Lab ABS	80 °C (wiki: 75 to 85 °C)	176 °F (167 to 185 °F)	8 h	0.65%	84 °C
Bambu Lab ASA	80 °C (wiki: 75 to 85 °C)	176 °F (167 to 185 °F)	8 h	0.45%	92 °C
Bambu Lab ABS-GF	80 °C	176 °F	8 h	0.53%	88 °C
Bambu Lab ASA-CF	80 °C	176 °F	8 h	0.33%	102 °C
Bambu Lab ASA Aero	80 °C	176 °F	8 h	0.80%	78 °C
Bambu Lab ABS Silver	85 °C	185 °F	12 h	not listed	not listed
Prusament ASA	80 °C	176 °F	4 h	0.16% in 24 h, 0.17% in 7 days	86 °C
Polymaker PolyLite ABS	70 °C	158 °F	6 h	chart only	98 °C
Polymaker ASA	70 °C	158 °F	7 h	chart only	100 °C

1 What temperature and how long should you dry ABS and ASA?

Dry ABS and ASA at 80 °C (176 °F) for 4 to 8 hours. Bambu Lab's data sheets say 80 °C for 8 hours in a forced-air oven, and Prusa dries Prusament ASA at 80 °C for 4 hours. Polymaker runs cooler: 70 °C (158 °F) for 6 hours on ABS and 7 hours on ASA.

1.1 The number

Bambu Lab rows come from its ABS, ASA, ABS-GF, ASA-CF and ASA Aero data sheets, which set a forced-air oven and give saturated absorption at 25 °C and 55 percent relative humidity (RH). The 75 to 85 °C range is from Bambu's drying wiki and the ABS Silver row from its ABS / ASA / PC Usage Guide. Prusament figures come from the Prusa Knowledge Base and the Prusament data sheet (24 °C, 22 percent humidity). Polymaker's PolyLite ABS and ASA sheets show absorption only as a chart.

ABS is acrylonitrile butadiene styrene and ASA is acrylonitrile styrene acrylate. GF and CF mean glass and carbon fiber.

1.2 Why

Water in the filament flashes to steam in the hot nozzle. Drying drives it out before it gets there. Polymaker measures a glass transition of 101 °C for its ABS and 98 °C for its ASA, against 69 °C on Bambu Lab's PETG Basic sheet. So ABS and ASA stay solid at 80 °C, while Prusa dries PETG (glycol-modified polyethylene terephthalate) at 55 °C and PLA (polylactic acid) at 45 °C.

The spool sets the ceiling. Every Bambu Lab data sheet above lists a PC (polycarbonate) and ABS spool rated to 90 °C (194 °F). Prusa warns that going above its temperatures makes filament "soften and stick together." It also says to keep to its times to avoid overdrying.

1.3 Do ABS and ASA absorb less moisture than PETG or nylon?

Less than nylon, but not less than PETG, on the makers' own data sheets. Each maker tests under different conditions, so compare within one column.

Table 2. Do ABS and ASA absorb less moisture than PETG or nylon?

Filament	Bambu Lab, saturated (25 °C, 55% RH)	Prusament, 7 days (24 °C, 22% humidity)
ABS	0.65%	not listed
ASA	0.45%	0.17%
PETG	0.45% (PETG Basic)	0.10%
PAHT-CF (nylon)	0.88%	not listed
PA6-CF (nylon)	2.35%	not listed

On Bambu Lab's sheets, ASA matches PETG and ABS takes up more. On Prusa's, ASA takes up 1.7 times what PETG does. The gap opens at nylon: Bambu's PA6-CF saturates at 2.35 percent, about 3.6 times ABS and 5 times ASA.

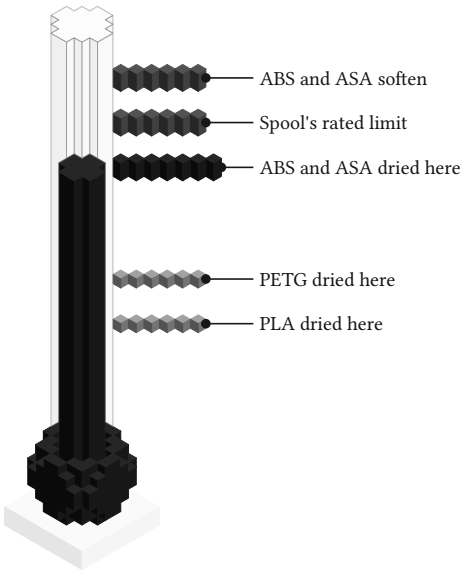


Figure 1. ABS and ASA dry well above the PLA and PETG settings, under the spool's limit and below the point where they soften; the marks are roughly to scale.

The ratings disagree too. Polymaker calls ABS moderately sensitive and PETG highly hygroscopic (quick to absorb water). Bambu Lab's ABS / ASA / PC guide calls ABS, ASA and PC highly hygroscopic, and Prusa lists ASA as partially hygroscopic. Bambu's drying table gives ABS, ASA and PETG the same status: drying recommended before use. It also recommends desiccant during printing for ABS-GF and ASA-CF.

1.4 Is a filament dryer hot enough for ASA?

Only if it reaches 70 °C for Polymaker's setting, or 80 °C for Bambu Lab's and Prusa's.

Table 3. Is a filament dryer hot enough for ASA?

Dryer	Maker's rating	Covers
Bambu Lab AMS 2 Pro	65 °C or less; ABS and ASA listed as not compatible	none of the settings above
SUNLU FilaDryer S2	up to 70 °C	Polymaker's 70 °C only
Bambu Lab AMS HT	80 °C for ABS and ASA, 8 h (12 h in its ABS guide)	Bambu's and Prusa's 80 °C
SUNLU FilaDryer S4 Pro	45 to 85 °C	every setting above, including ABS Silver's 85 °C

Prusa says to match a dryer's specification to the filament's drying temperature, and notes that food dehydrators usually run only at low temperatures. An enclosed Bambu Lab printer can also dry ABS and ASA on the heated bed at 90 to 100 °C for 12 hours.

1.5 Can you dry ABS filament in an oven?

Yes, in a forced-air (convection) oven at 75 to 85 °C (167 to 185 °F) for 8 hours, Bambu Lab's setting. Bambu wants the spool away from the heating elements and an oven at least 250 mm deep, 250 mm wide and 90 mm high per spool. It says never to use a microwave or a kitchen oven, whose hot spots near the elements can damage spool and filament.

The other two makers are less strict. Prusa warns that home ovens don't measure temperature precisely, so check yours with a separate thermometer. Polymaker says a household convection oven can work at a low, stable temperature. Bambu's data sheets list ABS and ASA as flammable, so stay with the oven while it runs.

1.6 What does wet ABS or ASA filament look like?

Bambu Lab's ABS / ASA / PC guide names surface bubbling, stringing and weaker parts. Its drying wiki adds oozing, holes and rough surfaces.

Prusa says the first sign is usually a poor surface finish. Very wet filament also gives low layer adhesion, blobs, and bubbling and smoke as it extrudes. Polymaker adds popping or hissing at the nozzle and pitted, uneven extrusion.

For ABS Silver, Bambu says to follow its drying conditions exactly to keep the surface gloss. Its clog guide also names damp carbon-fiber and glass-fiber (CF and GF) grades as especially prone to clogging the nozzle, so dry the GF and CF versions with extra care.

1.7 How to check it on your own print

- **Listen and look at the purge.** Pops, hissing or bubbles in the strand mean water, per Polymaker and Prusa.
- **Dry it, then reprint the same file.** If the stringing and bubbles go, moisture was the cause.
- **Check the spool's rating before 80 °C.** Bambu warns that some third-party spools may deform. Old black Prusament spools loosen above 45 °C unless an M4 x 65

mm screw joins the sides. The current black spool takes 90 °C.

- **Seal it straight away.** Store it below 20 percent RH with desiccant, per Bambu's data sheets. Bambu says freshly dried filament at about 55 percent indoor humidity can take up enough moisture to hurt print quality within 2 to 12 hours. At 20 percent RH it stays dry for 2 to 7 days.

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