# Should you use a cooling fan for ABS?

Asked 3D Content Team
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**Abstract.** Mostly no. Run ABS with the part fan off or low: PrusaSlicer's Generic ABS keeps it off, Bambu ABS runs 10%, and both raise it for bridges and fast layers.

**Keywords:** part-cooling, abs, asa, warping

**Table 1.** The number

| Slicer and profile | Normal layers | Fast layers (layer time under) | Bridges and overhangs | Fan off for the first |
|---|---|---|---|---|
| PrusaSlicer, Generic ABS | Off | 15% (30 s) | 25% | 4 layers |
| PrusaSlicer, Generic ABS @MK4S | Off | 10% (30 s) | 20% | 4 layers |
| PrusaSlicer, Generic ABS @COREONE | Off | 15 to 20% (30 s) | 25% | 4 layers |
| PrusaSlicer, Prusament ASA | 20% | 20%, no boost | 30% | 4 layers |
| PrusaSlicer, Prusament ASA @MK4S | 12% | 12%, no boost | 20% | 4 layers |
| PrusaSlicer, Prusament ASA @COREONE | 20% | 20 to 25% (20 s) | 25% | 4 layers |
| Bambu Studio, Bambu ABS (X1 Carbon and P1S, 0.4 mm nozzle) | 10% | 10 to 60% (30 s) | 80% | 3 layers |
| Bambu Studio, Bambu ABS @BBL A1 | Off | 10 to 20% (30 s) | 80% | 3 layers |
| Bambu Studio, Bambu ASA (X1 Carbon and P1S, 0.4 mm nozzle) | 10% | 10 to 35% (35 s) | 80% | 3 layers |
| Bambu Studio, Generic ABS | 10% | 10 to 80% (30 s) | 80% | 3 layers |

## 1 Should you use a cooling fan for ABS?

Mostly no: keep the part cooling fan off or low for ABS. PrusaSlicer's Generic ABS profile leaves it off on normal layers, and Bambu Studio's Bambu ABS profile runs it at 10%. Both raise it only for bridges, overhangs and layers that print in under 30 seconds: up to 25% in PrusaSlicer and 80% in Bambu Studio.

### 1.1 The number

Values are read from `PrusaResearch.ini` in PrusaSlicer 2.9.6 and the BBL filament profiles in Bambu Studio 02.08.02.61, following each preset's `inherits` chain to the parent that sets the value (`fdm_filament_abs.json`, `fdm_filament_asa.json` and `fdm_filament_common.json` for most Bambu figures).

### 1.2 Why print ABS with the cooling fan off?

Because ABS shrinks as it cools, about 1 to 2% according to Prusa, and a fan makes that cooling fast and uneven. Each new layer goes down hot on layers that have already shrunk, and the side the air hits cools first. Bambu Lab's ABS/ASA guide says interlayer cracking happens when "the internal stress from cooling during printing exceeds the interlayer adhesion strength," and lists "Fan speed too high" and a low chamber temperature among the causes. PrusaSlicer's tooltip

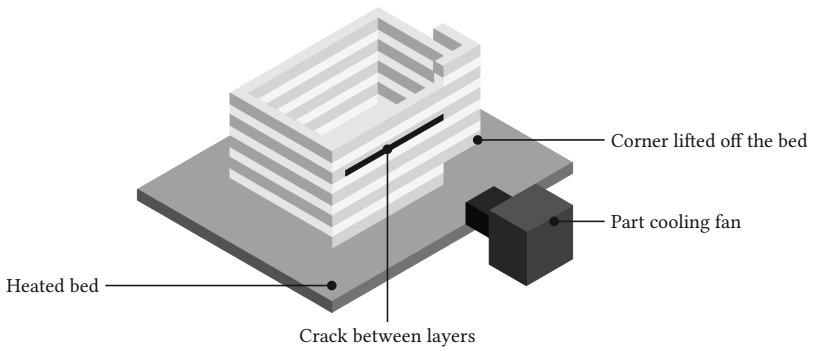



**Figure 1.** The side the fan blows on cools and shrinks first, so the stress opens a gap between layers there and pulls the corner up.

on “Keep fan always on” is blunter: “Useful for PLA, harmful for ABS.”

Polymaker’s PolyLite ABS data sheet lists the cooling fan as OFF. Bambu Lab’s sheet allows 0 to 80% but pairs it with a 45 to 60 °C chamber: that warm enclosure lets the whole part cool slowly and evenly. Chamber targets are in what chamber temperature ABS needs.

### 1.3 Does cooling cause warping in ABS?

Yes, it makes warping worse. The same shrinkage pulls at the base: Bambu Lab’s warping guide says the outer edges “cool faster than the centre, creating tension that pulls corners up.” Bambu warns that “even a nearby open window, air conditioning vent, or desk fan can cool one side of a print faster than the other, causing uneven warping.” It lists a fast auxiliary part cooling fan as a cause too, since it “cools outer walls too fast”, and its ABS and ASA profiles set that fan to 0%.

Both slicers keep the part fan off for the first 3 or 4 layers, which PrusaSlicer’s tooltip says is “so that it does not make adhesion worse.” If a corner still lifts, see why a print warps on only one corner and whether bed temperature affects warping.

### 1.4 When does ABS need the fan?

On bridges, overhangs and layers too short to cool on their own. PrusaSlicer’s “Bridges fan speed” (25% in Generic ABS) “is enforced during all bridges and overhangs.” Bambu Studio’s “Fan speed for overhang” (80%) covers bridges and any overhanging wall where more than 25% of the line width has nothing beneath it. The basics are in what the part cooling fan does, with PLA and PETG speeds for comparison.

Short layers are the other case: a layer that prints in under 30 s, the trigger in both slicers’ ABS profiles, gets more fan. In Bambu ABS the speed ramps from 10% toward 60% as layer time falls from 30 s to 12 s, then holds 60%. Below a second limit (20 s in Generic ABS, 12 s in Bambu ABS) the slicer also slows the print so the layer has longer to cool. Small parts and thin towers hit this; see why small prints melt and go blobby.

### 1.5 Should the part cooling fan be on for ASA?

Low, like ABS, though the shipped profiles give ASA a little more. The Prusament ASA presets tick “Keep fan always on”, so every layer after the first four gets 12 to 20% where Generic ABS gets none, and bridges get 20 to 30%. Bambu ASA caps its short-layer boost at 35% instead of Bambu ABS’s 60%, but starts it below 35 s instead of 30 s. The data sheets repeat their ABS advice: OFF for Polymaker ASA, 0 to 80% for Bambu Lab’s ASA.

Prusa says ASA “warps less” than ABS, but large parts still need an enclosure. For the bed, see the ASA bed temperature.

### 1.6 How do you set the fan for ABS?

- **PrusaSlicer:** Filament Settings, Cooling. Untick “Keep fan always on” so normal layers get no fan, and leave “Enable auto cooling” ticked. Set Fan speed Min and Max (15% in Generic ABS), “Bridges fan speed” (25%) and “Disable fan for the first” (4 layers). Under Cooling thresholds, “Enable fan if layer print time is below” holds the 30 s trigger.
- **Bambu Studio:** Filament settings, Cooling tab, Part cooling fan. “Initial layer fan” keeps the first 3 layers at 0%. “Min fan speed threshold” and “Max fan speed threshold” set the two ends of the short-layer ramp (10% at 30 s and 60% at 12 s in Bambu ABS). “Keep fan always on” decides whether normal layers get the minimum or nothing. “Fan speed for overhang” sets bridges (80%), and the Auxiliary part cooling fan group below stays at 0%.

### 1.7 How to check it on your own print

1. **Start from the ABS or ASA preset for your printer and nozzle,** not a PLA profile with the temperatures raised.
2. **Slice and switch the preview to fan speed** (“Fan speed (%)” in PrusaSlicer, “Fan Speed” in Bambu Studio). Normal layers should read off or at the low minimum. Only bridges, overhangs and short layers should run higher.
3. **Close the enclosure** before the print starts: the door and the top lid on a Bambu Lab printer.
4. **If layers split,** lower the fan first: untick “Keep fan always on” or cut the maximum. Then raise the bed and chamber temperature and block any draft. Bambu also lists under-extrusion as a cause, fixed with a hotter nozzle or a slower print.
5. **If a corner lifts,** check which side faces the fan, a vent or an open door, then work through glue and the ABS bed temperature.
6. **If bridges sag or small tops slump,** raise only the bridge or overhang speed, or the maximum for short layers. Leave the normal-layer speed low.

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