What happens if the bed temperature is too high?

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Abstract. The first layers stay soft and squash out into elephant foot; Polymaker caps PLA at 60 °C. Too hot also clogs nozzles and bonds PETG hard enough to tear PEI.

Keywords: pla, petg, bed-adhesion, build-plates

Table 1. The number

Material	Top of the makers' bed range	Glass transition (DSC, 10 °C/min)	Vicat softening (ISO 306)
PLA	60 °C Prusament, Polymaker and Prusa; 65 °C Bambu Lab on PEI plates	60 °C Bambu Lab, 61 °C Polymaker	57 °C Bambu Lab, 63 °C Polymaker
PETG	75 °C Bambu Lab data sheet; 80 °C Bambu Lab filament guide and Polymaker; 90 °C Prusament and Prusa	69 °C Bambu Lab, 81 °C Polymaker	69 °C Bambu Lab, 84 °C Polymaker
ABS	100 °C Bambu Lab and Polymaker	Not stated by Bambu Lab, 101 °C Polymaker	94 °C Bambu Lab, 104 °C Polymaker

1 What happens if the bed temperature is too high?

The bottom of the print stays soft. Above the plastic's glass transition, the first layers squash outward under the weight above them into elephant foot: Polymaker says PLA (polylactic acid) should not go over 60 °C. Bambu Lab adds nozzle clogs for PLA and PETG, and too much heat makes PETG weld to the plate.

1.1 The number

The figures come from the Bambu Lab PLA Basic, PETG Basic and ABS data sheets and filament guide, the Polymaker PolyLite PLA, PETG and ABS data sheets, the Prusament PLA and PETG data sheets and the Prusa Knowledge Base. DSC is differential scanning calorimetry. PETG is glycol-modified polyethylene terephthalate, ABS is acrylonitrile butadiene styrene and PEI is polyetherimide. Prusa sets 85 °C for the first PETG layer and 90 °C after.

Every range tops out within a few degrees of the glass transition or past it. Treat the maker's ceiling as the limit and start below it.

1.2 What does a bed that is too hot do to a print?

Table 2. What does a bed that is too hot do to a print?

Symptom	Materials	When the sources say it starts
Elephant foot: the first layer flares out past the walls	Any; worse on larger models and wider bases	PLA above 60 °C, "sometimes only 50" (Polymaker)
Bottom layers deform as the next ones land	Any	Bed set above the material's glass transition (Polymaker)
Nozzle clogging	PLA and PETG	"Excessively high" bed temperature, no figure given (Bambu Lab)
Filament softens in the extruder of an enclosed printer	PLA, PVA, TPU	Bed above 45 °C with the door shut (Bambu Lab)
The same, for PETG	PETG	Bed above 60 °C in the guide's text, above 70 °C in its table (Bambu Lab)
Print welds to the plate and tears the surface on removal	PETG on smooth PEI; Polymaker also says textured PEI	No figure; Bambu Lab says a higher bed increases adhesion

Bambu Lab's elephant foot guide adds that larger models and wider bases flare more. PVA is polyvinyl alcohol and TPU is thermoplastic polyurethane. The heat that softens filament in the extruder is what the hobby calls heat creep. Bambu Lab's fix is to open the front door or lift off the top glass cover.

1.3 What bed temperature is too high for PLA?

Above 60 °C, by Polymaker's rule, and 50 °C can already flare some PLA. Prusa sets 60 °C and warns that PLA "gets soft and deforms at temperatures over 60 °C." Bambu Lab's filament guide allows 45 to 65 °C on its PEI plates, but its own PLA Basic data sheet lists 35 to 45 °C and a 60 °C glass transition. On an enclosed printer, every PLA setting above 45 °C comes

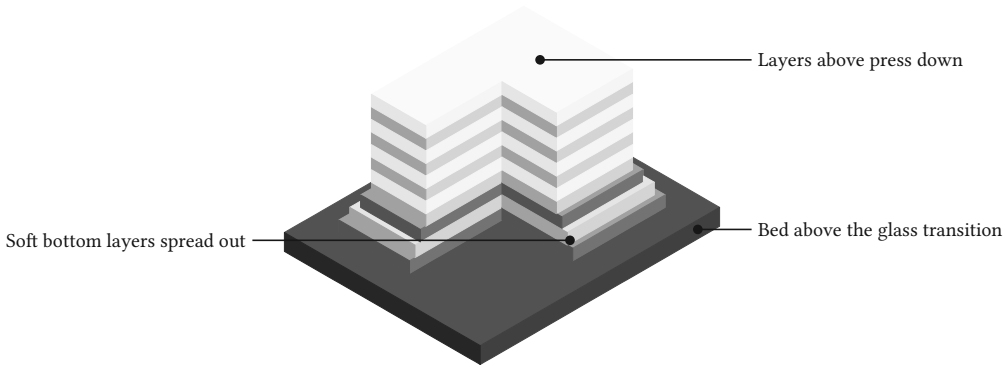


Figure 1. Bed heat keeps the first layers soft while the layers above press down on them, so the base spreads out into elephant foot.

with Bambu Lab's open-the-door advice. More PLA numbers are on the PLA bed temperature page.

1.4 How do you stop PLA elephant foot with bed temperature?

Keep the bed at 60 °C or lower, and try 50 °C if the base still flares. If it flares at 50 °C, check the nozzle height: Polymaker names a nozzle set too close to the plate as the other cause. Then let the slicer trim what remains. Prusa's elephant foot compensation shrinks the first layer by about 0.2 mm on a 0.4 mm nozzle, and Prusa's own profiles ship with it on. Polymaker's other fix is a raft, which lifts the part clear of the hot plate.

1.5 What bed temperature is too high for PETG?

Anything over your spool's ceiling: 75 to 90 °C depending on the maker. PETG's makers run its bed at or past its glass transition, so too hot shows up as fusing and flare, not a single number. Prusa warns against bare smooth PEI because "the adhesion may be too strong" and it "might damage the sheet". Bambu Lab asks for glue on its Smooth PEI Plate with anything but PLA "to prevent the sheet from tearing." The full ranges are on the PETG bed temperature page.

1.6 Why

Bed heat is what makes the first layer grip: Bambu Lab's textured PEI guide says "a higher bed temperature increases adhesion." The same heat keeps the bottom layers soft. Bambu Lab's elephant foot guide names two forces on that first layer: bed heat keeps it from cooling, and the layers above press down on it. Above the glass transition, Polymaker says, the material "becomes deformed as material is deposited on top." The plate also warms the air. On a closed printer, that air reaches the filament waiting in the extruder. Bambu Lab groups PLA with the filaments that soften below 60 °C, which is why its door rule starts at a 45 °C bed. How bed temperature relates to the glass transition is on the bed temperature explainer.

1.7 How to check it on your own print

- **Read the spool, then set the bed below its ceiling.** Start inside the range, not at its top. Bambu Lab printed its own PLA test bars on a 35 °C bed and its PETG bars at 70 °C.
- **Measure the flare.** Print a 25 × 25 × 10 mm cube with elephant foot compensation at 0 and no brim, and let the bed cool fully before removing it. With calipers, measure the middle of each side at the top and at the first layer. Bambu Lab's example measured a 0.09 mm flare on X and 0.11 mm on Y, and set compensation to their average, 0.10 mm.
- **Enter the value.** In Bambu Studio it is Process → Quality → Precision → Elephant foot compensation; in PrusaSlicer, Print settings → Advanced. Measure again after changing plates. Bambu Lab says the value differs between them.
- **On an enclosed printer, open the door.** Bambu Lab's thresholds: bed above 45 °C for PLA, PVA and TPU, and above 60 °C for PETG.
- **If the part won't come off, cool and lower.** Wait for the plate to drop to 35 °C or lower (Bambu Lab) or below 40 °C (Polymaker). Next time, set the bed 5 to 10 °C lower. More release steps are on the print removal page.

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