What is the difference between an enclosure and a heated chamber?

Asked 3D Content Team
Published September 23, 2026 · Last verified September 23, 2026

Abstract. An enclosure only traps heat from the bed, about 50 °C in Polymaker's printer figures; a heated chamber adds its own heater and holds a set 60 to 65 °C.

Keywords: enclosures, chamber-heating, warping

1 What is the difference between an enclosure and a heated chamber?

It comes down to the heat source. An enclosure only traps heat from the bed, so you cannot set the air temperature. A heated chamber has its own heater and holds the temperature you choose. Polymaker gives about 50 °C for Bambu Lab's unheated P1S and X1C. Bambu Lab's heated chambers reach 60 to 65 °C.

1.1 The comparison

Every figure comes from a printer or filament maker's published specs and guides. Both columns use Bambu Lab printers so the comparison stays like for like: the passive number is Polymaker's for the P1S and X1C, and the heated numbers are Bambu Lab's own maximums for the X1E and H2D. In the table, PC is polycarbonate, PA is nylon, CF marks a carbon-fiber fill, and PPA and PPS are high-temperature engineering plastics.

Table 1. The comparison

	Passive enclosure	Actively heated chamber
Heat source	The bed only (Prusa's enclosure: "heating is provided only by the 3D printer's heatbed")	A dedicated heater, plus a circulation fan on the H2D
Chamber temperature reached	About 50 °C (Polymaker, P1S and X1C)	Up to 60 °C (X1E) or 65 °C (H2D)
How it is set	It is not: the air "increases based on the temperature set for the heated bed and cannot be precisely controlled" (Bambu Lab, P1S)	A target in the slicer, held by the printer. The X1E heater runs only between 40 and 60 °C
ABS and ASA	Enough: Prusa asks for an enclosure and a bed of at least 100 °C for ABS	Optional: Bambu Lab sets 60 °C for large or dense prints prone to warping, off otherwise
PC, nylon (PA) and fiber-filled grades	Helps with PC: Prusa says PC "tends to warp a lot", and printing inside an enclosure "helps"	Bambu Lab turns the heater on by default, at 60 °C, for PC, PA, PA-CF, PPA-CF and PPS
PLA and PETG	Can run too hot: Bambu Lab says to open the door and remove the top cover once the bed reaches the filament's softening point	Heater off: Bambu Lab's default for these is 0 °C, meaning disabled

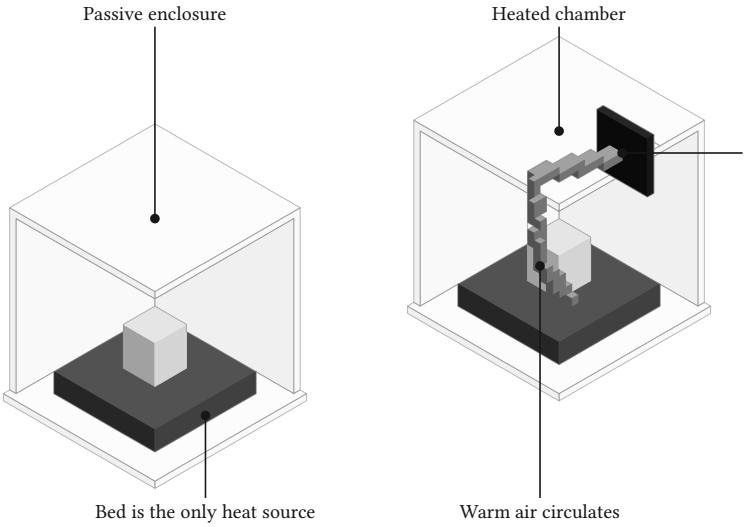


Figure 1. In the enclosure the only heat comes up from the bed. The heated chamber adds a heater and fan on the back wall that push warm air around the part.

1.2 Why the heat source matters

A part warps when its layers cool unevenly: the edges shrink first and pull the corners off the bed. Warm, still air slows that cooling, so both designs help. The ABS chamber temperature page has the mechanism and the ABS numbers.

In a passive enclosure, the air temperature is a side effect of the bed: run the bed hot for ABS and the box warms up, turn it down and the box stays cooler. A heated chamber breaks that link. Its heater brings the air to a target before the print starts and holds it there, whatever the bed is doing.

Too much heat is a problem in both designs. Bambu Lab's guide puts the softening point of most PLA at about 45 °C and most PETG (glycol-modified PET) at about 70 °C, and softened filament can jam in the extruder. A closed passive box can drift up to that point on its own, so the guide says to open it up. With a heated chamber, you switch the heater off.

For ABS, Bambu Lab notes that running the heater lengthens warm-up and weakens air filtration, so it leaves the heater off by default.

1.3 How to check it on your own printer

1. **Measure the air, not the bed.** Hang a thermometer probe mid-height in the chamber, away from the bed and the walls. Prusa's enclosure already ships with a temperature sensor.
2. **Run the bed at your hottest material's setting.** Shut the door and wait for the reading to stop climbing. Where it levels off is your enclosure's ceiling, in your room.
3. **Compare that with what the material needs.** If the ceiling meets the figure in your material's guide, an enclosure is enough. If it falls short for PC or nylon, you need a heat source that does not depend on the bed. A third-party heater brings warranty questions of its own.
4. **Check again before a PLA or PETG print.** If the reading sits near the filament's softening point, open the door or lid.

References

[1] Original Prusa Enclosure, Prusa Knowledge Base. https://help.prusa3d.com/article/original-prusa-enclosure_347479. Accessed September 23, 2026.
[2] P1 Series FAQ, Bambu Lab Wiki. https://wiki.bambulab.com/en/p1/manual/faq. Accessed September 23, 2026.
[3] Bambu Lab printers, Polymaker Wiki. https://wiki.polymaker.com/the-basics/3d-printers/popular-printers/bambu-lab. Accessed September 23, 2026.
[4] Bambu Studio chamber temperature setting, Bambu Lab Wiki. https://wiki.bambulab.com/en/software/bambu-studio/chamber-temperature. Accessed September 23, 2026.
[5] Bambu Lab H2D Technical Specifications, Bambu Lab. https://bambulab.com/en/h2d/tech-specs. Accessed September 23, 2026.
[6] ABS, Prusa Knowledge Base. https://help.prusa3d.com/article/abs_2058. Accessed September 23, 2026.
[7] Polycarbonate (PC), Prusa Knowledge Base. https://help.prusa3d.com/article/polycarbonate-pc_165812. Accessed September 23, 2026.

Cite as: Asked 3D. "What is the difference between an enclosure and a heated chamber?." September 23, 2026. https://asked3d.com/answers/enclosure-vs-heated-chamber. Last verified September 23, 2026.