How to test a 3D print for leaks before you trust it

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Abstract. A fill-and-observe leak test on a dry tissue with two sourced pass points: dry after one night (Prusa Research, closed models) and dry after 48 hours (Bambu Lab, vases).

Keywords: watertight, waterproofing

Table 1. The procedure

Stage	Wait	Where to look	Pass criterion
First fill	none, watch while it fills	seam line, base edge, outer wall	no drops, no dark streak
Overnight	one night	tissue under the base, outer wall	tissue dry, wall dry to the touch
Long soak	48 hours	tissue under the base, whole outer wall	tissue still dry
Closed part	one night sunk in a bucket	the inside, after opening	interior dry

1 How do you test a print for leaks?

Fill the print to the brim, stand it on a dry white tissue and wait. Bambu Lab's vase test counts a dry tissue after 48 hours as a pass; Prusa Research's closed-model criterion was a dry interior after a night submerged. Check the seam, the perimeter-to-infill transitions and the base first, since that is where Prusa found leaks.

1.1 The procedure

Bambu Lab's guide shows a tissue still dry under a water-filled vase after 48 hours of containment, with the water dyed black so any wetting shows. Prusa Research's closed-model pass was a dry interior after a night in a bucket. Neither source states how soon a first check should happen, and Prusa does not describe how its 20 and 30 meter depth tests were run.

1.2 Why the test takes days

A leak in a printed part is rarely a hole you can see. Prusa Research printed several dozen test models and found the main source of leakage was not the contact between layers but the seam, the point on each layer where the nozzle starts and stops. The other path was the transitions between solid infill and perimeters, the outline lines that form the wall. In its closed-box tests, PETG (glycol-modified PET) leaked quickly through the seams and through the contact points between perimeters and solid infill.

Those paths are narrow, so water takes time to work through them. A thick wall with sparse infill inside gives water a void to fill first, and Prusa's Knowledge Base warns that walls thick enough to need infill create irregularities and leakage pathways. Water that gets into the infill can then weep out anywhere on the outer wall hours after the fill. A wet patch away from the seam points at wall thickness, not at the seam.

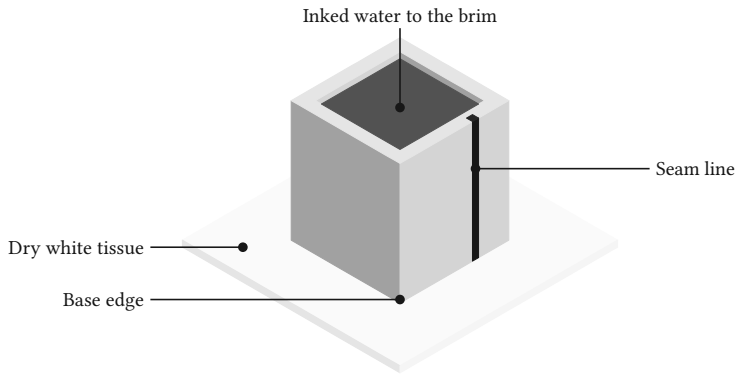


Figure 1. Inked water shows up on the tissue, and the seam and the base edge are the first places to look.

Under-extrusion widens the paths. Bambu Lab's guide says filament changes volume between melting and solidifying, so a flow ratio set too low leaves holes in the extruded lines. Damp filament adds more holes. Raising flow and adding perimeters narrows the paths; the perimeter counts per material are on how many walls make a print watertight.

Bambu Lab says its settings only reduce the risk of leakage, and that the result depends on the filament, the size, the structure and the design of the print. Prusa's part 2 tests make the same point from the other side: a box that failed in PETG held at 20 meters in PLA (polylactic acid). Trust the test, not the profile.

Each leak has a signature:

Table 2. Why the test takes days

What you see	Where it leaks	Usual cause
A vertical line of beads or a dark stripe on one side	the seam	seam gaps stacked layer on layer
A damp patch spreading across the wall	the wall itself	too few perimeters or too little flow
A wet ring on the tissue with a dry wall	the base	where bottom layers meet the first perimeters

Get it wrong and a quick pour passes a part that sweats through the wall in use: a dry tissue after a minute proves nothing. A dry tissue after two days proves the part.

1.3 How to check it on your own print

1. Print the part with the exact profile you intend to use, let it cool fully and wipe the outside dry.
2. Stand it on a white paper tissue and fill it to the brim. A drop of ink in the water, as Bambu Lab did, makes a wet patch obvious.
3. Watch the seam and the base edge while it fills, then wipe the outside once and look for beads forming again.
4. Leave it overnight. Lift it, check the tissue and the underside, and run a dry fingertip along the seam.
5. Refill and leave it for 48 hours. A dry tissue at that point matches Bambu Lab's result. For a closed part, sink it in a bucket overnight instead. Open it and check the inside is dry, which was Prusa Research's criterion.

References

[1] Watertight 3D printing PT1: Vases, cups and other open models (Prusa Research blog). https://blog.prusa3d.com/watertight-3d-printing-pt1-vases-cups-and-other-open-models_48949/. Accessed September 21, 2026.

[2] Watertight 3D printing part 2: Airtight closable models (Prusa Research blog). https://blog.prusa3d.com/watertight-3d-printing-part-2_53638/. Accessed September 21, 2026.

[3] Watertight prints (Prusa Knowledge Base). https://help.prusa3d.com/article/watertight-prints_112324. Accessed September 21, 2026.

[4] Guide to reduce the risk of prints leakage (Bambu Lab Wiki). https://wiki.bambulab.com/en/filament/reduce-vase-leaking-guide. Accessed September 21, 2026.

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