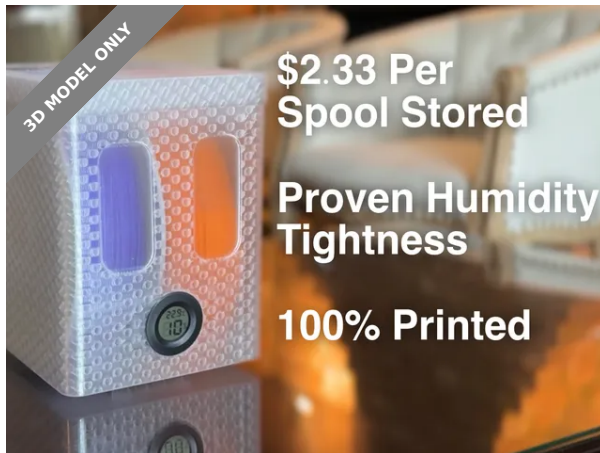




Holy Grail Filament Dry Box | A Tribute



Moby Motion

[VIEW IN BROWSER](#)

updated 12. 11. 2025 | published 12. 11. 2025

Summary

This isn't the holy grail of filament storage, it is merely a tribute.

[3D Printers](#) > [Accessories](#)

Tags: [cup](#) [spool](#) [box](#) [holder](#) [print](#) [filament](#) [modular](#) [stackable](#) [storage](#) [humidity](#) [petg](#) [dry](#) [control](#) [protection](#) [organization](#) [management](#) [moisture](#) [desiccant](#) [hygrometer](#) [systems](#) [transparent](#) [farm](#) [compatible](#) [e1](#) [18](#) [chitu](#)

This isn't the holy grail of filament storage, it is merely a tribute. But after 46+ iterations, 240 hours of torture testing, humidity measurements steady at 10% for weeks, this might just be the the filament dry box you're looking for.

What Makes This Special?

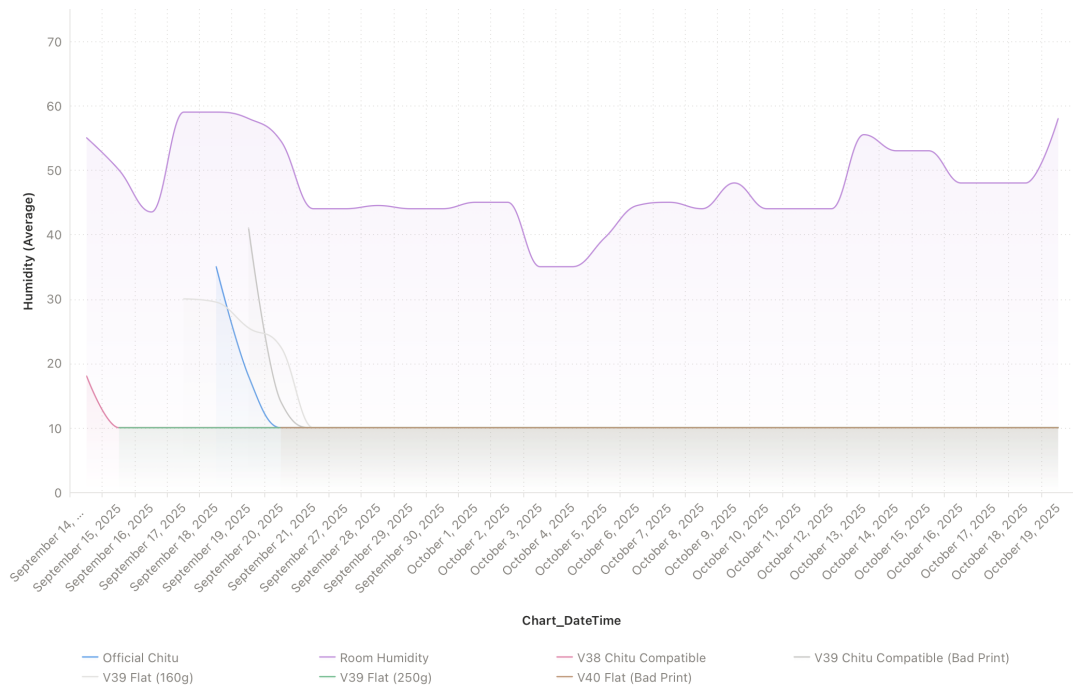
In short: 1) Real humidity data - 10% maintained for weeks while room fluctuated 38-60%, 2) \$2.33 per spool stored (almost half the price of cereal containers), 3) 100% printable with no hardware required, 4) <15 hours print time (flat bottom), 5) Transparent walls to see contents, 6)

Stackable design, 7) Integrated hygrometer slot, 8) Compatible with Chitu Systems E1 dryer (optional bottom)

Must Haves - 7/7 COMPLETE	Nice to Haves - 9/10 COMPLETE
Keeps filaments dry (10% humidity over weeks - test still running)	NEW! Supports filament samples in opaque materials
Hygrometer slot	Dry with Chitu E1 (compatible bottom)
Stackable (tested up to 5 high)	Transparent (completely see-through)
Know what's inside	Cheaper than cereal boxes (almost)
Cheap	Pretty (it's grown on me)
100% printable (no additional hardware)	Small
	Quick to print (<15 hours flat bottom)
	Easy to print (minimal support)
	Just 2 plates
	Print from it (not a dealbreaker if it is for you)

Accessories:

- NEW! [Single spool version](#), which print in a single plate in 6 hours
- NEW! [Sample system](#) that fit perfectly in the windows, great if you plan to print this in opaque materials
- [Stacking shelving system](#) allows you to stack these boxes, along with official Chitu boxes, and grab them from the middle
- (Unofficial but tested) [Dessicant holder](#) allows you to fit almost 250 g of desiccant at the bottom. Easy to fill and empty with just a funnel. Won't fit the Chitu bottom though!
- I use the [Chitu E1 Dryer](#), [these hygrometers](#), and [this desiccant](#); using these affiliate links supports my work at no cost to you.



Dry Testing Results:

The boxes with less desiccant took slightly longer to reach 10% humidity, but once a box has reached 10% humidity, every box has stayed there for the first month+ of testing. I'll be updating this as I get the chance to do more testing.

Dry Testing Methodology:

I tested 5 different prototypes and one official Chitu Dry box as a control. All prototypes were printed on a Bambu A1 using Bambu Clear PETG Translucent. These had a variety of configurations and contents to test long-term humidity tightness in a wide range of real world scenarios. Some prototypes had dried (n=1) and some had non-dried (n=4) spools, some had a small amount of desiccant (≤ 150 g, n=3) and some had a large amount of desiccant (> 150 g, n=2), some had flat bottoms (n=3) and some had Chitu dryer compatible bottoms (n=2). Desiccant was placed in the middle of the spools using a printed insert and/or at the back of the container in a bag that came with my desiccant. This places it far away from the hygrometer, and ensures our humidity reading is actually conservative. Boxes were not opened during the testing period, to test humidity ingress at the joints.

FAQ:

- What spools does this support? It's designed for up to a 200mm outer diameter and 74mm depth - though, due to the rounded corners, you can gain a bit of depth if the diameter is smaller. Comment if you use spools larger than 200mm

Why isn't it the holy Grail?

Is this perfect? No. The worst part of the current design is probably the lid mechanism. It's very tight, because this is what allows it to be incredibly humidity tight without additional parts like gaskets. Getting the lid off and putting it on is a bit of a dance - you have to take it off a little at the front, then the back, then the front etc until it's off or on. It does loosen slightly over time as it gets used to the shape of the box, and you get better at doing this movement. Let me know in comments if: a) this is worth it as it is b) you'd prefer a looser lid, where you have to change desiccant slightly more frequently, or c) you'd prefer a looser lid, where you also have to print a TPU gasket to get the same level of tightness

In theory, the seal isn't as tight as mass produced designs (though I haven't measured any difference yet). It looks utilitarian, not fancy, but it's grown on me. \$2.33 is only the filament cost, and doesn't account for printer time or the hygrometer. It's calculated with a \$13.99 spool of PETG printing 3 boxes, that fit 6 spools, giving $\$13.99 / 6 = \2.33 of filament per spool stored. This is a typical, non-sale, bulk price for Bambu PETG Translucent, and similar to the price of other translucent PETG brands.

Tips for Optimising Transparency:

- Dry your filament and don't let it get wet
- The transparency effect is very dependent on lighting, and that's quite easy to fix. Ideally, it would have lots of natural light coming in from the front. If this isn't possible, pointing the flash from your phone at it is enough to make it much more transparent, so much so that you can tell apart very similar spools
- All development and testing uses official Bambu Clear PETG Translucent - please see comments for results with several other types of filament

Detailed print settings:

- 0.4 mm nozzle
- Seam position "back"
- Arachne wall generator
- 1 wall loop
- Top surface pattern, bottom surface pattern, and internal solid infill pattern all aligned rectilinear, infill direction 0°

- 10% gyroid sparse infill
- Default tree supports. It actually prints surprisingly fine without supports, but do this at your own risk

KNOWN ISSUES:

- FIXED 8/11/2025 - V66 had shrank
- FIXED 15/10/2025 - The first upload had worse transparency in one of the eyes

Changelog

The initial design process was detailed in my [YouTube video](#). Changes since then:

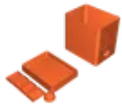
- 5/10/25 - Small Fix: changed the flat bottom print profile, just because I had misplaced it too far in the corner. It was forcing supports to start on the inside of the box itself, when most can start on the plate.
- 15/10/2025 - Fixed worse transparency in one of the eyes, which was due to some slicer settings not transferring over to the file I released.
- 28/10/2025 - Added sample holders in front of the windows, to allow you to print this easily and quickly using opaque materials like PLA, but still know what's inside at a glance. The old boxes are still available please see the "legacy" print profiles.
- 8/11/2025 - Box had shrank and no longer fit the Chitu, likely due to a change I had to make for the single spool version. The flat bottom was fine, but tight for 200mm spools, and larger spools wouldn't fit. Lids for legacy (V46) won't work for the latest (V66) and vice versa. But, V71 is the same size as V46 and so lids should be interchangeable.

Disclaimer: This is an independent design created by Moby Motion and is not affiliated with, authorized, or endorsed by Chitu Systems. It is designed to be compatible with the FilaPartner E1.

Model files



latest-v71-flat-bottom-print-clear-or-opaque.3mf



latest-v71-chitu-compatible-bottom-print-clear-or-o... .3mf



legacy-v66-shrunk-release-flat-bottom.3mf

☐ Please see known issue affecting V66



legacy-v46-no-sample-holder-flat-bottom.3mf



legacy-v46-no-sample-holder-chitu-compatible-bottom.3mf

License ©

This work is licensed under a **Standard Digital File License**.

Digital files have a strict non-commercial, personal use only license.

You shall not share, sub-license, sell, rent, host, transfer, or distribute in any way the digital file or 3D printed versions of this object, nor any other derivative work of this object in its digital or physical format (including remixes of this object).

You can not host these files on other digital platforms, web stores or cloud repositories.

The objects may not be used in any way whatsoever in which you charge money, collect fees.

- ✖ | No sharing or redistributing in any way of the 3D files or derivatives
- ✖ | No remixing
- ✖ | Non-commercial Use (only for personal use)